MASTER
M 2

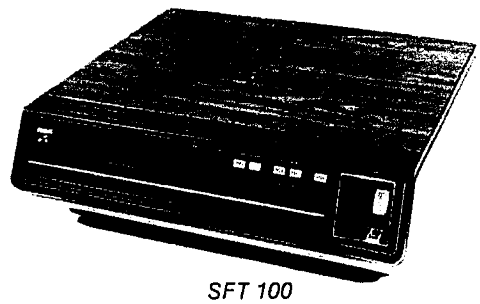
FILE
CED-1

RCA

SelectaVision VideoDisc Player CED

Service Data

Model SFT 100



SFT 100

RCA Corporation
Consumer Electronics
Technical Publications
600 N Sherman Dr | Indianapolis, Indiana 46201

SAFETY CAUTION:

Before servicing this chassis, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Data.

SERVICE DATA CONTENTS

SPECIFICATIONS:

Power Input:	120 Volts AC, 60Hz
Power Consumption:	35 Watts
Antenna Impedance:	75 ohm in/out Coaxial
RF Output Level:	3mV Maximum 1mv Minimum Switchable to Channel 3 or 4
Circuit Board Assemblies:	PW200 Resonator PW500 System Control PW700 NLAC & Noise Coring PW900 PreAmp PW3000 Signal Processing PW AC IN AC Input PW Photo Time Indication
Weight:	Approximately 20 pounds (9.072 kg.)
Dimensions:	Width - 17" (431.8mm) Depth - 15 1/2" (393.7mm) Height - 5 3/4" (144.05mm)
Turntable Speed:	450 RPM
Play Time:	2 hours (1 hour per disc side)
Video Signal System:	EIA Standard NTSC Color Signals
Disc Play System:	CED - Capacitance Electronic Disc

First Edition — First Printing

SAFETY PRECAUTIONS

Before returning any instrument to the customer a safety check of the entire VideoDisc Player should be made. The service technician must be sure that no protective device built into the instrument by the manufacturer has become defective or inadvertently defeated during servicing, so be sure you conduct all the checks and tests below.

Comply with all caution and safety related notes located on or inside the VideoDisc Player cabinet and on the player deck.

WARNING: Alterations of the design or circuitry of this VideoDisc Player should not be made.

Any design alterations or additions such as, but not limited to, circuit modifications, auxiliary speaker jacks, switches, grounding active or passive circuitry, use of unauthorized cables, accessories, etc. may alter the safety characteristics of this VideoDisc Player and potentially create a hazardous situation for the user.

Any design alterations or unauthorized additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

Use only authorized lubricants where lubricants are specified. If you lubricate, remove any excess lubricants.

When reassembling the VideoDisc Player, always be certain that all the protective devices are put back in place, such as nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, isolation resistor capacitor networks, etc.

When service is required, observe the original lead dress. Components that indicate evidence of overheating or other electrical or mechanical damage should be replaced.

Do not change component configuration (spacing, clearance, etc.). Example: Resistor spaced off of printed board.

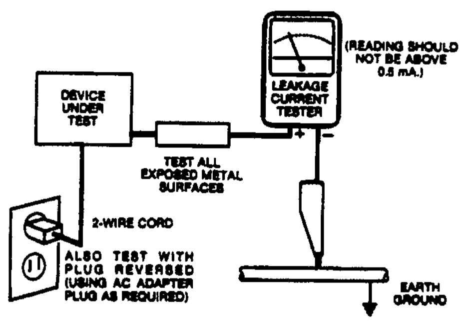
Leakage Resistance Cold Check

With the AC plug removed from the 120V AC source, place a jumper across the two plug prongs. Turn the instrument AC switch on by placing the function lever in the "play" position. Using an ohmmeter, connect one lead to the jumpered AC plug and touch the other lead to all push buttons/customer controls, all customer exposed metal or conductive parts of the cabinet such as screwheads, metal or metalized overlays, control shafts, etc. except antenna connections.

The resistance measured should not be less than 1 megohm. Now measure the resistance of the antenna connections which should not be less than one megohm or greater than 5.2 megohms except for the center connection of the F connector that feeds the TV receiver which measures "open" when the function switch is in the "play" position. Any resistance value below or above the values specified indicates an abnormality which requires corrective action. Repeat all the preceding tests with the function switch in the "off" and "load/unload" positions. All the preceding tests should be conducted with a disc in the player and repeated without a disc in the player.

Leakage Current Hot Check (On Completely Assembled Instrument) With a Disc in the Player and all Tests Repeated without a Disc in the Player)

Plug the AC line cord directly into a 120V AC outlet (do not use an isolation transformer for this check). Use a Leakage Current Tester or a metering system which complies with American National Standards Institute (ANSI C101.1 "Leakage Current for Appliances") and Underwriters Laboratories (UL) 1410 (50.7). Measure for current with the function switch in the "play" position and repeat with the function switch in the "load/unload" and "off" positions from all customer exposed metal or conductive parts of the cabinet (antenna connections, screwheads, metal or conductive overlays customer push buttons/controls, control shafts, etc.) to a known earth ground (waterpipe, conduit, etc.), particularly, any exposed metal or conductive part having a return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse plug in the AC outlet and repeat test. ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND CORRECTIVE ACTION MUST BE TAKEN BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER.



AC Leakage Test

Interconnected Equipment AC Leakage Test

Avoid shock hazards. The television instrument, accessory, or cable(s) to which this VideoDisc Player is connected should have the applicable sections of the leakage resistance cold check and the leakage current hot check performed. Do not connect this VideoDisc Player to a TV antenna, cable or accessory that exhibits excessive leakage currents.

Product Safety Notice

Many electrical and mechanical parts in VideoDisc Players have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Data and its Supplements and Bulletins. Electrical components having such features are identified by shading on the schematics and by (*) on the parts list in this Data and its Supplements and Bulletins. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in this Data and its Supplements and Bulletins may create shock, fire or other hazards. Product Safety is continuously under review and new instructions are issued from time to time. For the latest information always consult the current RCA Service Data, Supplements and Bulletins. A subscription to, or additional copies of, RCA Service Data may be obtained at a nominal charge from your RCA Consumer Electronics Distributor or from RCA Technical Publications, 600 North Sherman Drive, Indianapolis, Indiana 46201.

GENERAL INFORMATION

> **NOTE:** Technicians servicing this product will find helpful the following related RCA Technical Training Publications:
>
> **VideoDisc Technical Manual SFT1-TM,** and **Workshop Manual SFT1-1.**
>
> These publications may be ordered, for a nominal charge, from: RCA Technical Publications 1-450, 600 N. Sherman Dr., Indianapolis, IN 46201.

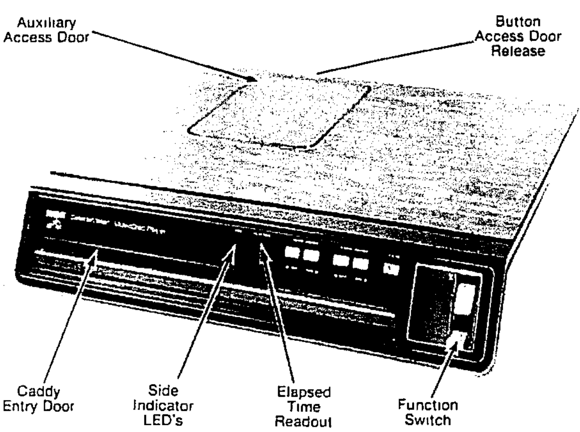
The RCA SelectaVision VideoDisc Player, being a complete new product, has many innovative electronic and mechanical features. The player is simple to operate, and is easy to install. External connections to and from the player are minimal, involving only intercept and reconnection of the television VHF antenna input lead (cable). Necessary connecting lead (cable) and matching transformers are included to handle all but unusual installations.

1. A 5 foot, 75 ohm coaxial cable connects from the antenna out connector on the player, to the VHF antenna input on the television receiver. Use cable direct if the television has 75 ohm VHF antenna input connector; use via a 75 to 300 ohm matching transformer/adaptor if the television VHF antenna input is 300 ohm.
2. A 300 to 75 ohm matching transformer/adaptor mates a 300 ohm twin lead antenna system (outside or rabbit ears) to the player 75 ohm antenna input system. (Captive, screw type lugs are integral to the 300 to 75 ohm antenna matching transformer/adaptor; strip and insert the 300 ohm twin lead wires then tighten the screws.) Keep in mind — for different or "odd" antenna systems — the antenna input and output of the VideoDisc Player is 75 ohm unbalanced.

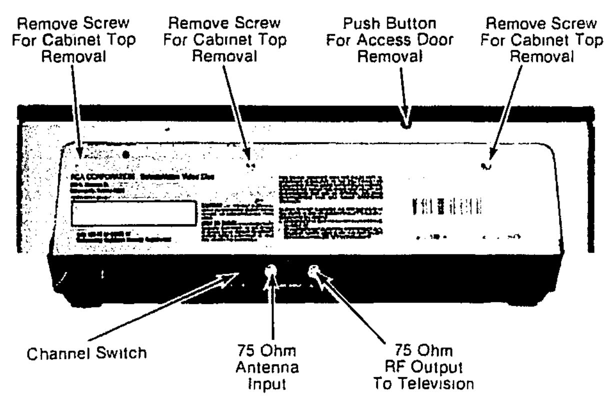
Antenna connection instructions should be carefully followed. The player produces an R-F signal which is transmitted on VHF Channel 3 or 4 (switch selectable) frequency. If the player antenna output is connected to an antenna, directly or in parallel from the television antenna input connections, the player may broadcast a signal. Broadcasting an unauthorized signal could violate certain regulations of the Federal Communications Commission regarding the operation of R-F devices. Recheck the installation to avoid any broadcasting possibilities; make sure the 75 ohm shielded cable is used to connect the R-F output of the player to the television receiver, and that no other connections are paralleled from these terminals.

The physical location of the antenna "in" and "out" connectors are depicted in the rear apron photo of the VideoDisc Player (Fig. 1-1). "F" type connectors accept the VHF antenna input and output cables.

Interface of the antenna system, VideoDisc Player, and monitor television receiver is controlled by an antenna switch on the player. The antenna switch on the player is link connected to the Player Function Switch (Fig. 1-1). When the Player Function Switch is in the "OFF" position, the antenna is connected directly (via the player antenna switch) to the television receiver and the television will operate normally. When the player function switch is in the "Play" or "Load" position, the antenna is disconnected and the player R-F output is connected directly to the television VHF antenna input connector. Under this condition the television receiver will receive a signal only on Channels 3 or 4 (switch selectable on the rear of VideoDisc Player Fig. 1-1). Specifically the VideoDisc Player antenna switch system serves to either connect the antenna system direct to the television VHF antenna input or disconnect the antenna system and connect the VideoDisc Player R-F output direct to the television VHF antenna connector.



(Front View)



(Rear View)

Fig. 1-1. — SFT 100

CIRCUIT PROTECTION

Fuse (or Device)	Circuit Protected	Physical Location
F1 1 Amp SB (426973)	AC input	PW AC In circuit board
F2 1/4 Amp SB (149004)	Power Supply	PW AC In circuit

FREQUENTLY USED ABBREVIATIONS

AM — Audio Mute (or Audio Modulation)
AO — Arm Output
AS — Arm Stretcher
C — Capacitor
CF — Ceramic Filter
CO — Clock Output (or Chroma Output)
CR — Diode
CV — Control Voltage
CY — Cored Luminance
F — Fuse
G — Ground
Hz — Hertz
J — Jack
KPO — Kicker Pulse Output
L — Coil
M — Motor
OS — Optical Switch
P — Plug
PLL — Phase Lock Loop

PS — Power Switch
Q — Transistor
R — Resistor
RS — Radius Sense
S — Switch
SB — Sound Beat
SC — Stylus Clean
SL — Stylus Lifter
SM — Servo Motor
SQ — Squelch
SR — Sound Reference
SS — Servo Signal
U — Integrated Circuit
V — Voltage
VR — Voltage Regulator
VDO — Vertical Detail Output
Y — Luminance or B/W Video
Z — Impedance

GLOSSARY

ANGSTROM — One tenth of a millimicron. Angstrom unit is a term utilized to express the length of very short waves.

BEATS — A term used to describe the unwanted signals produced when two original signals are mixed together.

BURIED SUBCARRIER — See Subcarrier, except frequency is down converted. Example: In CED system color burst is 1.53 MHz.

BURST — A short time occurance (8 to 10 Hz) of the color subcarrier signal appearing right after Horizontal sync, but centered on the blanking portion of the video waveform.

C — Designates capacitor on schematics and in parts list.

CF — Designates Ceramic Filter on schematics and in parts list.

CR — Designates Diode on schematics and in parts list.

Caddy — Name given to device in which the VideoDisc is enclosed.

Chroma — The color portion of a video signal.

DAXI — Digital Auxiliary Information recorded on the disc and utilized by the system control microprocessor to control operation of the disc player.

Delta Frequency (Δf) — A term to indicate that a signal or frequency has some variation or change.

Dropout — A momentary absence of carrier signal off the disc, whether due to uneven stamping or a particle of dust on the disc or stylus.

Deviation — A term used to describe how far the FM carrier frequency swings when it is modulated.

Emphasis — The process of boosting the level of the high frequency portions of the video signal.

FM Signal — Abbreviation for Frequency Modulated Signal.

Field — One half of a television picture. A field consists of 262.5 horizontal scanning lines across a picture tube. Two fields (line 1 thru 252.5 and line 252.5 thru 525 interlaced) are necessary to complete a fully scanned television picture (frame). The two sweeps of the TV picture tube, or two fields make up one complete TV picture or "frame". Frame repetition is 30 Hz, therefore field repetition is 60 Hz.

Frame — One complete television picture (see "Field").

Gate — A circuit which will deliver an output only when a specific combination of its inputs are present for use in analog or digital applications.

IC — Designates Integrated Circuit on schematics and in parts list.

Interlacing — The property of the scan lines of two television fields to lie in-between each other.

Interleaving — A term used to indicate that the harmonics of the chrominance signal lie in-between the harmonics of the luminance portion of the video signal as it is viewed on a spectrum analyzer. This means that the color information of a video signal does not interfere with, although it is broadcast at the same time as, the luminance information.

OPERATING CONTROLS AND FUNCTIONS

Power On/Off

Power is applied to the player by placing the player function switch in either the "Load" or "Play" position. The digital readout indicator is then illuminated. In the play position the readout indicator displays elapsed play time in minutes. In the load position the readout indicator displays a flashing "L".

Rapid Access Forward

Pressing the Rapid Access "FWD" function button moves the pickup arm assembly forward rapidly (player must be in play mode). The readout indicator displays elapsed play time in minutes. The stylus lifter circuit is in operation during this mode therefore the stylus is not in contact with the disc.

Rapid Access Reverse

Pressing the Rapid Access "REV" function button moves the pickup arm assembly to the rear rapidly (player must be in play mode). The readout indicator displays elapsed play time in minutes. The stylus lifter circuit is in operation during this mode therefore the stylus is not in contact with the disc.

Visual Search Forward

Pressing the Visual Search "FWD" button permits faster than normal (16 times normal speed) forward movement of the pickup arm assembly. The stylus remains in contact with the disc permitting Visual Search forward (scan) viewing of the program material (audio is muted during this mode of operation).

Visual Search Reverse

Pressing the Visual Search "REV" button permits fast reverse movement (16 times normal speed) of the pickup arm assembly. The stylus remains in contact with the disc permitting Visual Search reverse (scan) viewing of the program material (audio is muted during this mode of operation).

Pause

Pressing the "Pause" button places the stylus lifter circuit into operation raising the stylus off the disc. Video is blanked, audio is muted, and there is no movement of the pickup arm assembly in this mode of operation. The digital readout will display flashing "P". Pressing the "Pause" button a second time returns the player to normal operation.

Load

Place player function lever in "Load" position. Read out indicator will flash "L". Slide disc caddy into player until it latches, then pull caddy sleeve out. The disc and caddy spine will remain in the player. Depending upon which side of disc is up at time of insertion, the corresponding side indicator LED will light. To remove disc and spine from player — place function switch in "Load" position, slide empty caddy sleeve into player until it releases spine catch. Remove loaded caddy from player.

Play

After player is loaded place function lever in "Play" position. In approximately 8 seconds a picture will appear on the TV screen. The digital readout will display elapsed playing time in minutes. When play is completed (approximately 60 minutes) the digital readout will display flashing "E".

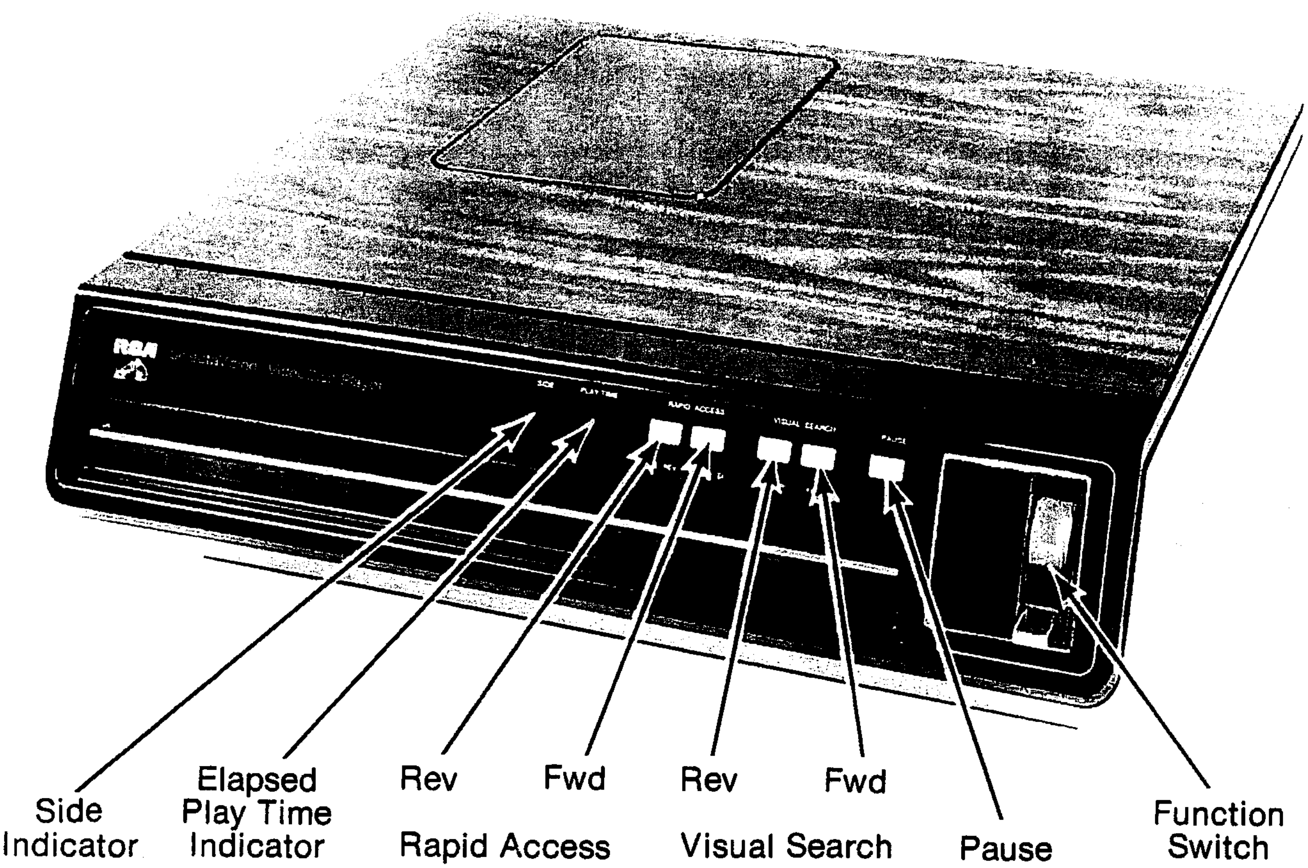


Fig. 1-2. — Operating Controls

GLOSSARY
(continued)

Jitter — The name of an effect on the playback picture (sometimes referred to as "Wiggles" or "Flutter"). The picture appears to have a rapid shaking motion.

L — Designates Coil on schematics and in parts list.

Luminance — This is the portion of the video signal which contains B/W information and sync (see "Y" signal).

Micron — One millionth part of a meter.

NLAC — Non Linear Aperture Correction — System which compensates for non-linear response of the stylus to the disc information.

NTSC — (National Television Systems Committee) — These four letters identifty the United States Color Television Standard.

Q — Designates Transistor on schematics and in parts list.

R — Designates Resistor on schematics and in parts list.

Resonator — A circuit that responds in accordance to oscillations produced in another circuit.

RF — Abbreviation for Radio Frequency.

Sample and Hold (S/H) — A process by which the value of a particular signal is measured at a specific moment in time — then this signal is stored for later use.

Servo — Short for Servomechanism. An electromechanical device whose mechanical operation (for instance, motor speed) is constantly being measured and regulated so that it closely matches or follows an external reference.

Spine — Device utilized in conjunction with the VideoDisc and caddy to support the disc when it is transferred from the caddy to the player.

Stylus — Diamond tipped device utilized to transfer video and audio information from disc to pickup arm assembly electronics.

Subcarrier — A carrier signal inserted within the pass-band of a broadcast signal to provide a channel for the transmission of additional information.

Example: In color TV, the 3.58 MHz color burst.

T — Designates Transformer on schematics and in parts list.

TP — Abbreviation for Test Point on schematics and in text.

VCO — (Voltage Controlled Oscillator) An oscillator whose frequency of oscillation is governed by an external voltage and/or timing capacitor in IC applications.

VCXO — (Voltage Controlled Crystal Oscillator) Similar to VCO except that a quartz crystal is used as a reference.

XTAL — Abbreviation for Crystal.

Y — Designates Crystal on schematics and in parts list.

Y Signal — The B/W portion of a video signal containing B/W information and sync (see Luminance).

ELECTRONIC/MECHANICAL SYSTEMS DESCRIPTION

ELECTRONICS: System Control and Signal Processing

Fig. 1-4 is an electrical systems block diagram of the RCA SFT100 VideoDisc player. Most electronic circuits in the VideoDisc player can be separated into two basic functional categories: SYSTEM CONTROL and SIGNAL PROCESSING.

The system control electronics are on the PW 500 circuit board, which is mounted above the VideoDisc turntable. A microcomputer integrated circuit is the heart of the system control function. The microcomputer receives input commands from the user-operated function switches and, in turn, controls the operation of the player. The system control microcomputer also decodes the **Digital Auxiliary Information** (DAXI) on the VideoDisc to develop the elapsed play time readout and to control forward movement of the pickup arm assembly during the "play" mode.

The signal processing circuits are equipped with several integrated circuits and discrete devices. These are mounted on the PW 3000 circuit board and on the pickup arm assembly. The signal processing circuits detect the video and audio information on the VideoDisc, demodulate it and process it through a comb-filter circuit, and then modulate it onto either a Channel 3 or Channel 4 television RF carrier. This modulated television RF signal is then connected through coaxial cable to any NTSC television receiver.

Functional Operation

Operation of the VideoDisc player is totally controlled by the system control microcomputer. When the user selects an operating mode — **PLAY, RAPID ACCESS FORWARD or REVERSE, VISUAL SEARCH FORWARD or REVERSE, PAUSE, or LOAD** — input commands related to that mode are fed to the microcomputer. The microcomputer decodes these input commands and, in turn, uses the decoded information to "direct" other system control electronics to establish the electrical conditions needed to perform the selected operation mode. The state of all signal processing circuits is controlled by the Not Squelch (**$\overline{SQ}$**) output of the microcomputer. When the Not Squelch line goes to a logic "Lo" state, all of the signal-processing electronic circuits are disabled (squelched).

The system control microcomputer also has direct control over the pickup arm assembly. This involves: — the servo motor operation, moving the arm forward (toward center of disc) during normal play; — the stylus lifter operation, raising and lowering the stylus as the various functions are initiated; — and the stylus kicker circuits, enabling the system to provide the VISUAL SEARCH feature. The microcomputer also controls the direction of the servo system. In the RAPID ACCESS REVERSE, and VISUAL SEARCH REVERSE operating modes, the microcomputer instructs the servo system to operate in the reverse mode.

The system control microcomputer also generates the elapsed play time display. The time display information is developed from a Digital Auxiliary Information (DAXI) signal. This signal is prerecorded on the VideoDisc on line 17 of each vertical field. The DAXI signal includes a field identification number that is decoded by the system control microcomputer. This decoded information is used by the microcomputer to develop the elapsed time display. The DAXI code is not present in the RAPID ACCESS FORWARD and REVERSE operating modes because the stylus is lifted from the disc. Therefore, during these two modes of operation the time display must be artifically maintained so that the approximate elapsed time of the program material can be tracked while the stylus is lifted and the arm is moved in either direction across the disc. This is accomplished by a "photo interrupter" circuit. This circuit computes the approximate elapsed time by tracking the position of the arm relative to the disc radius.

The signal processing electronics on the pickup arm assembly detect information recorded on the VideoDisc. The arm also contains components for providing the features of VISUAL SEARCH FORWARD and REVERSE as well as Locked Groove protection. They are: the "stylus kicker" coils which will cause the stylus to skip two grooves of the VideoDisc; the "armstretcher" transducer which corrects for timebase variations in the recovered chrominance and luminance signals.

The primary function of the pickup arm signal-processing electronics is to detect the information recorded on the VideoDisc. This is accomplished by modulating a 910-MHz UHF resonator circuit with the capacitance changes on the VideoDisc surface. The variations in capacitance on the VideoDisc surface causes the 910-MHz resonator center frequency to be modulated. This, in turn, amplitude modulates a fixed 915-MHz oscillator signal. This signal is then peak detected, with the resultant signal representing the capacitance variations on the VideoDisc. The signal is then preamplified and AFT controlled before being applied to the remaining signal processing electronics. The Arm Output (AO) signal contains the video and audio FM-modulated carrier information and all of the information necessary for player control.

The AO signal is fed to the system control electronics (PW 500 board) and to the signal processing electronics (PW 3000 board).

On the signal processing electronics board the AO signal is applied to two FM demodulator ICs, one for audio and the other for video. The audio demodulator IC converts the AO signal audio carrier information into a discrete audio signal. The audio signal is fed to the sound modulator, which frequency modulates a 4.5-MHz sound carrier that is fed to the RF Modulator IC.

The audio demodulator IC also contains a Defect Detector circuit. This circuit prevents audio noise if the audio carrier of the AO signal is momentarily interrupted by microscopic debris on the disc surface.

Before the AO signal is applied to the Video Demodulator IC, it is passed through a NonLinear Aperture Correction (NLAC) circuit. The NLAC circuit removes the 716 kHz audio modulation from the video information. It does this by phase inverting the audio modulation, and then adding it back to the original signal. This cancels out the audio modulation in the carrier information.

The video FM carrier, with the audio modulation removed is applied to the Video Demodulator IC which demodulates the video carrier. The video demodulator also contains a defect detection circuit, which allows a portion of the previous horizontal line to be inserted when a defect caused by loss of carrier occurs.

The output of the video demodulator, being composite video with "buried" subcarrier chroma, is then applied to a comb-filter circuit. The comb filter dynamically separates chrominance and luminance information from the composite video information.

The output of the comb filter is "combed" chrominance and "combed" luminance. The combed chrominance output signal contains low frequency luminance information and the DAXI signal which is transmitted with each vertical field. After bandpassing the 1 to 2 MHz chroma signal, the two remaining signals (low frequency luminance and DAXI) are separated by low pass filters. The low frequency luminance information is recombined with the "combed" luminance information to provide the luminance output. Vertical Detail Output (VDO) containing the DAXI signal is supplied via the DAXI buffer IC to the system control microcomputer.

The luminance and chrominance information is coupled from the comb-filter circuit to the video converter circuit. The video converter up-converts the 1.53-MHz chrominance information to 3.58-MHz. The 3.58-MHz chroma and the luminance information are then combined. The composite video signal is then supplied to the RF modulator where the audio FM carrier is added and a RF signal on Channel 3 or Channel 4 is developed for output to a standard NTSC television receiver.

Also developed in the video converter stage is the drive signal for the "armstretcher" time base corrector circuit. The correction signal is developed by comparing the up converted 3.58-MHz chroma information with a crystal controlled 3.58MHz reference oscillator. Any phase or frequency difference between the two

ELECTRONIC/MECHANICAL SYSTEMS DESCRIPTION (continued)

signals develops an error signal which is applied to the armstretcher circuit. This circuit operates a solenoid (located on the pickup arm assembly) moving the stylus (laterally with respect to the disc) to maintain a constant disc to stylus velocity. The armstretcher circuit output is also coupled to the converter oscillator (5.11 MHz VCXO) in order to maintain phase lock between the upconverted 3.58 MHz color signal and the crystal controlled 3.58-MHz reference oscillator.

AC and DC Power Supplies

All the electronic circuits in the SFT100 VideoDisc player are isolated from the power line, i.e. cold ground. Referring to Figure 1-3, the AC input is applied to the PW AC IN circuit board. Intitial protection is provided by a 1-Amp fuse (F1). The AC power switch, S2, is controlled by the function lever. AC power is applied to power transformer, T1, when the function switch is in the "Load" or "Play" position. Power transformer, T1, is protected by F2, a 1/4-Amp fuse.

The secondary of T1 contains two windings — one developing nine volts RMS utilized to generate a 5-volt regulated supply, the other developing 18 volts RMS providing a 22-volt unregulated DC supply.

AC power from S2 is also applied to AC Play Switch, S4. The AC play switch is controlled by the function lever and is closed only in the PLAY position. The AC play switch is open in the "load" position.

AC Play switch, S4, connects to the AC Spine Sense switch, S8, in series with the turntable motor. The AC spine sense switch is activated only with a spine and disc in the player. The closing of AC power switch (S2), AC play switch (S4), and AC spine sense switch (S8) applies power to the turntable motor (i.e. all three switches must be activated before the turntable motor will function).

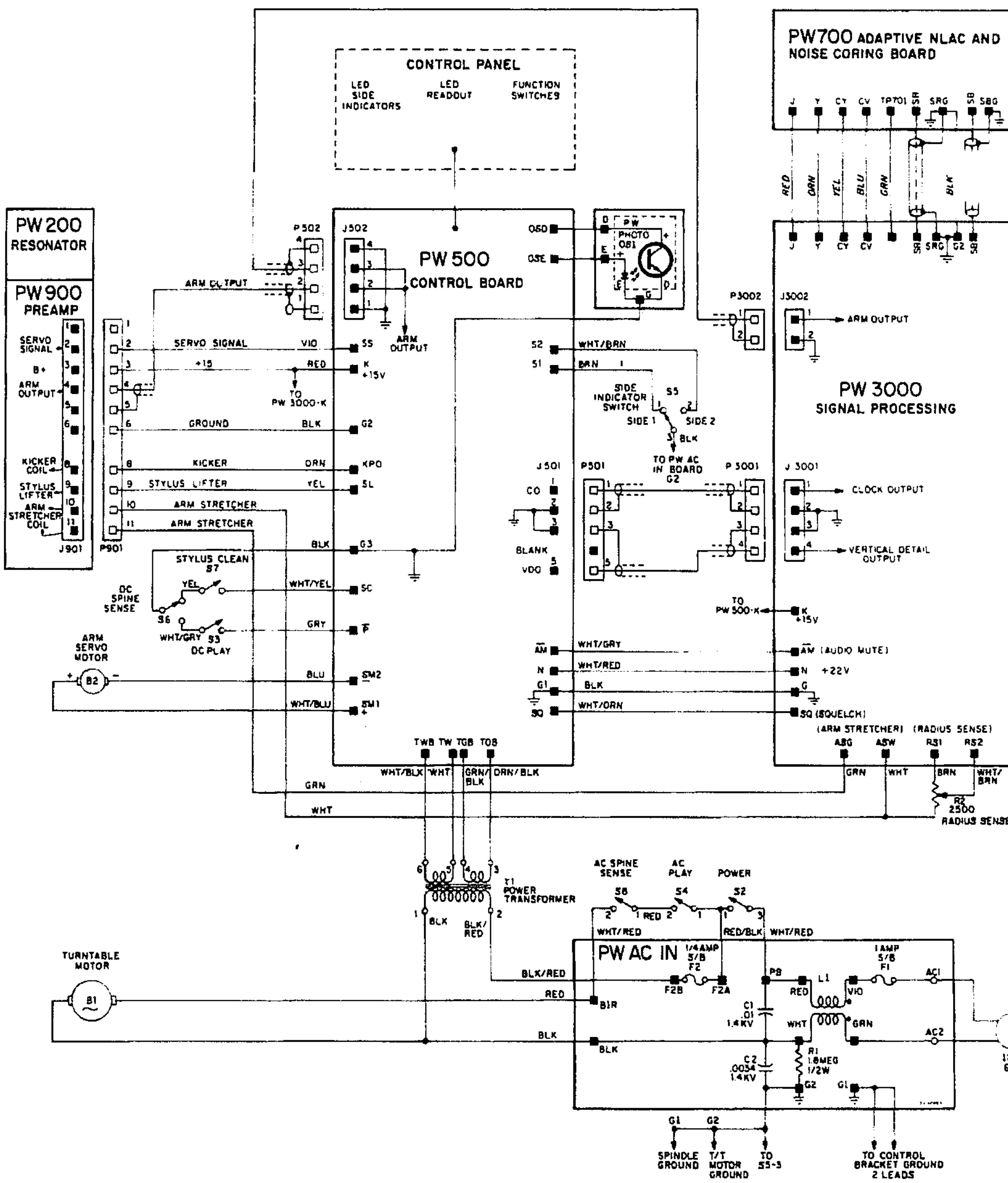


Fig. 1-3. — Overall System Wiring Diagram

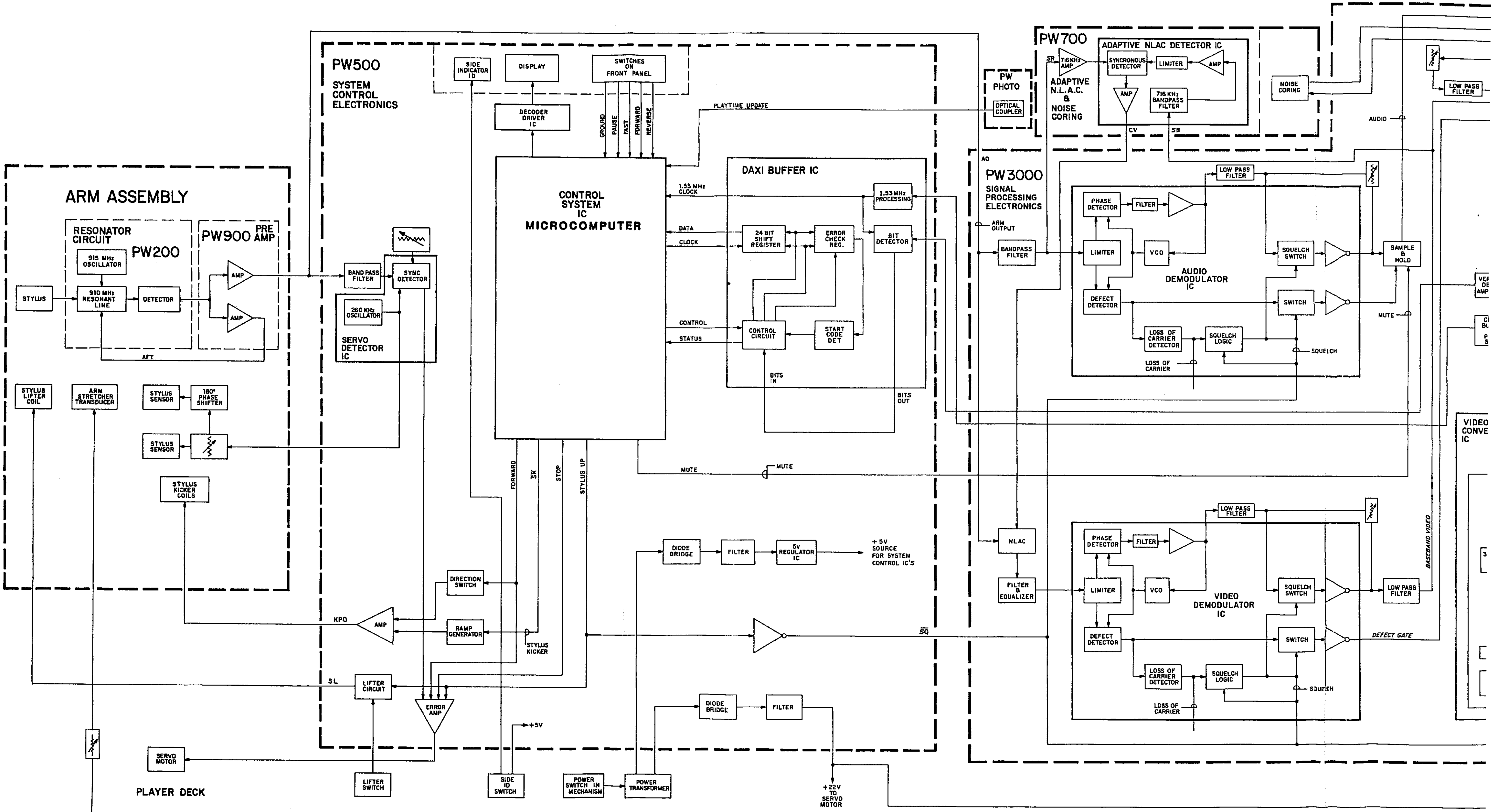


Fig. 1-4. — System Control And Signal Processing Block Diagram

SYSTEM BLOCK DIAGRAM

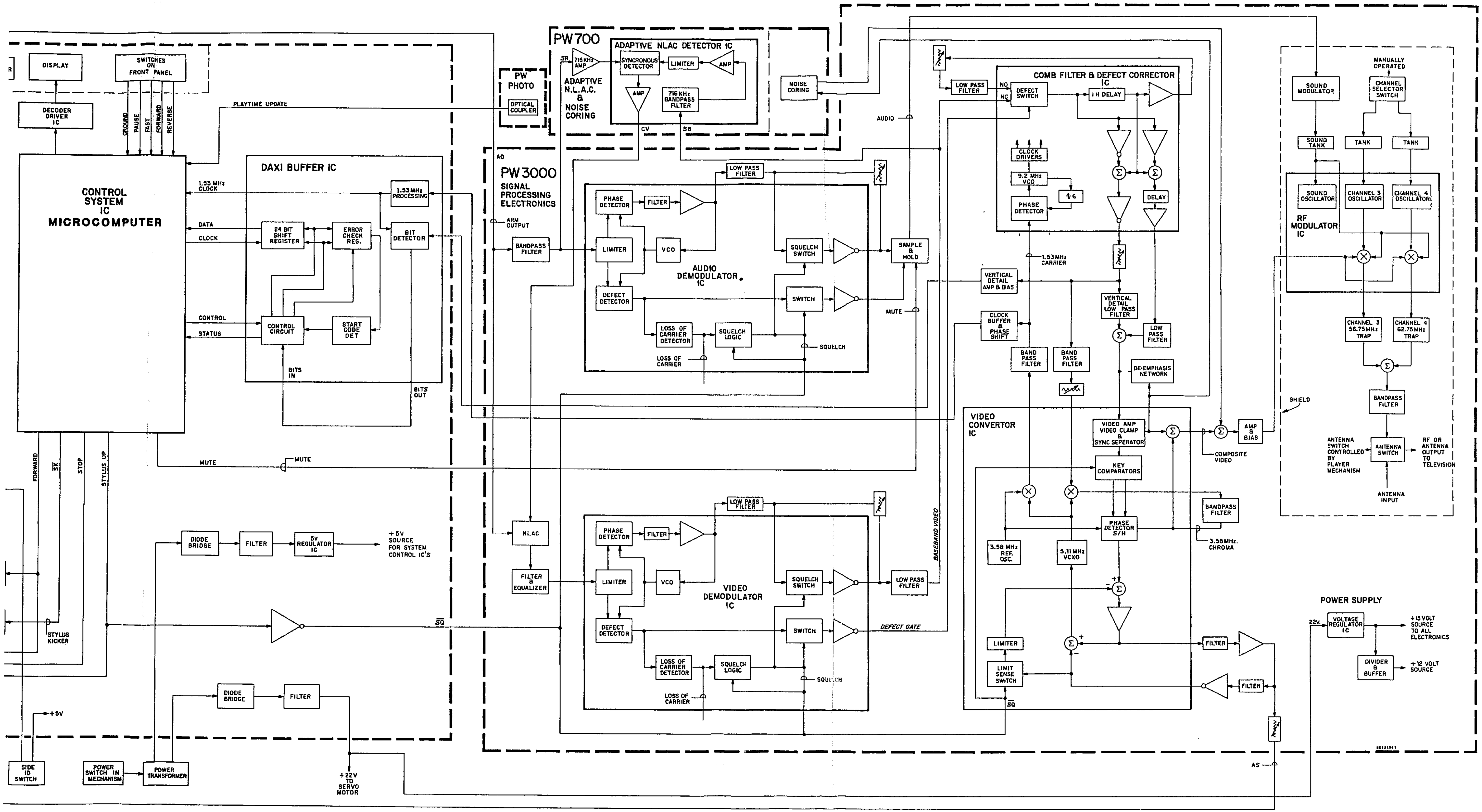
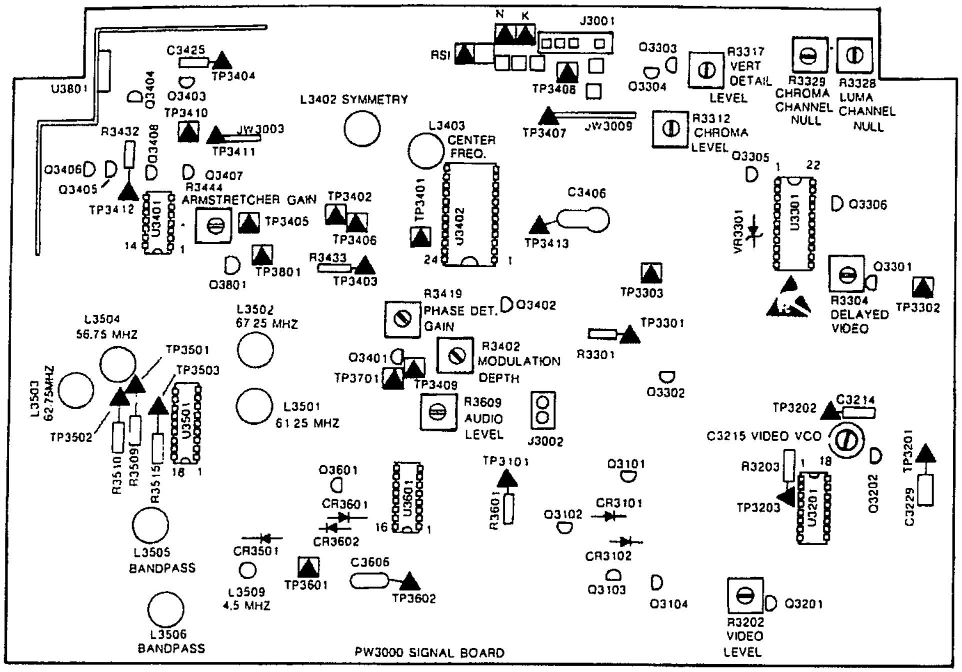
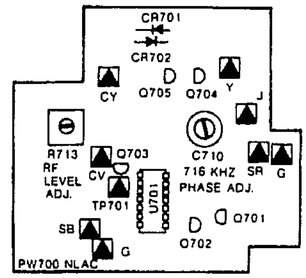


Fig. 1-4. — System Control And Signal Processing Block Diagram

TEST POINT AND ACTIVE DEVICE LOCATION





ACTIVE DEVICES

CR701 REF LEVEL DIODE 119597
CR702 REF LEVEL DIODE 119597
Q701 716 KHZ AMP 143794
Q702 INVERTER 149040
Q703 NLAC CONTROL AMP 143794
Q704 CORING AMP 141370
Q705 CORING DRIVER 143794
U701 SYNCHRNNOUS DET. 149019

TEST POINTS

CV CONTROL VOLTAGE
CY CORED LUMA
G GROUND
J +12V
SB SOUND BEAT
SR SOUND REFERENCE
Y LUMA
TP701 DET. OUTPUT

TEST POINTS

K +15VDC
N +22VDC
RSI ARMSTRETCHER SET-UP
TP3101 ARM INPUT
TP3201 COMPOSITE VIDEO BASEBAND
TP3202 5.25 MHZ VCO
TP3203 FM INPUT
TP3301 VERTICAL DETAIL OUTPUT
TP3302 LUMINANCE OUTPUT
TP3303 VERTICAL DETAIL
TP3401 LUMINANCE INPUT
TP3402 VCXO SET-UP
TP3403 PHASE DETECTOR OUTPUT
TP3404 1.53MHZ BUFFERED
TP3405 ARMSTRETCHER SET-UP
TP3406 VCXO INPUT
TP3407 CHROMINANCE
TP3408 1.53 MHZ
TP3409 COMPOSITE VIDEO NTSC
TP3410 +7VDC REFERENCE
TP3411 ARMSTRETCHER SET-UP
TP3412 VCXO SET-UP
TP3413 3.58 MHZ OSC.
TP3501 CHANNEL 3 OUTPUT
TP3502 CHANNEL 4 OUTPUT
TP3503 4.5 MHZ INPUT
TP3601 AUDIO
TP3602 716 KHZ VCO
TP3701 NLAC BALANCE
TP3801 +12VDC

ACTIVE DEVICES

CR3101 DIODE 119597
CR3102 DIODE 119597
CR3501 VARACTOR 149033
CR3601 DIODE 119597
CR3602 DIODE 119597
Q3101 NLAC BUFFER 143794
Q3102 NLAC AMP 149040
Q3103 NLAC AMP 143794
Q3104 NLAC OUTPUT DRIVER 143794
Q3201 PHASE CORRECTOR 143794
Q3202 VIDEO BUFFER 143794
Q3301 DELAYED VIDEO DRIVER 143794
Q3302 VERTICAL DETAIL DRIVER 143794
Q3303 CHROMA / VERTICAL DETAIL BUFFER 143794
Q3304 CHROMA DRIVER 143794
Q3305 CHROMA BUFFER 145776
Q3306 LUMA BUFFER 143794
Q3401 VIDEO BUFFER 143794
Q3402 VIDEO AMP 143794
Q3403 CLOCK PHASE SHIFTER 143794
Q3404 CLOCK BUFFER 143794
Q3405 TRANSDUCER 145395
Q3406 TRANSDUCER DRIVER 149041
Q3407 TRANSDUCER DRIVER 145395
Q3408 TRANSDUCER DRIVER 149041
Q3601 DEFECT SAMPLE & HOLD 148070
Q3801 12V REGULATOR 145395
U3201 VIDEO FM DEMOD 149036
U3301 COMB. FILTER / DEFECT CORRECTION 149039
U3401 QUAD OP AMP 149018
U3402 VIDEO CONVERTOR 149034
U3501 RF MODULATOR 149037
U3601 AUDIO FM DEMOD 149035
U3801 15V REGULATOR 149038
VR3301 9.1V ZENER 149042

CAUTION OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

MISE EN GARDE OBSERVER LES PRÉCAUTION NÉCESSAIRES LORS DE LA MANIPULATION DE DISPOSITIFS SENSIBLES À L'ÉLECTRICITÉ STATIQUE

MAJOR MECHANICAL PARTS OR SUB-ASSEMBLIES*

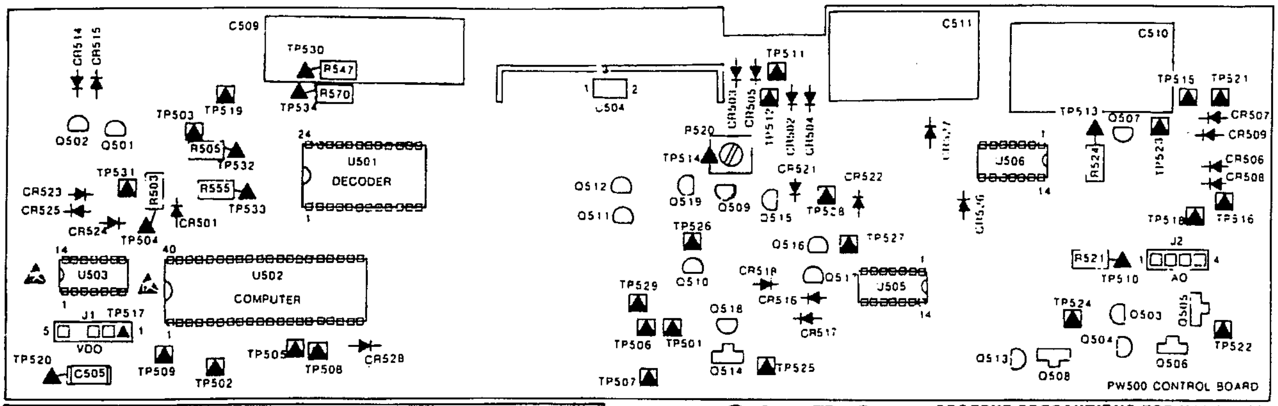
BEARING KIT, TURNTABLE (UPPER OR LOWER INCLUDES BEARING, FELT, OIL & RETAINER) 149052
BELT, SERVO DRIVE 149045
BELT, TURNTABLE DRIVE 149048
CLUTCH & GEAR, SERVO DRIVE 149009
DRUM, PHOTO INTERRUPTION 149013
GEAR, HELICAL, SPUR, SHAFT ASSEMBLY, SERVO DRIVE 149011
KNOB, FUNCTION LEVER 149051
MOTOR ASSEMBLY, TURNTABLE DRIVE 149005
MOTOR, SERVO DRIVE 149006
PICKUP ARM ASSEMBLY * (LESS CARTRIDGE) 149002
RACK GEAR, ARM DRIVE 149012
STYLUS CARTRIDGE 149000
STYLUS LIFTER ASSEMBLY 149003
TRANSDUCER ASSEMBLY 149001
TURNTABLE WITH FOLLOWER 149049
TURNTABLE CAP, SPINDLE 149050
* SEE SERVICE DATA FOR ASSEMBLY WARRANTY

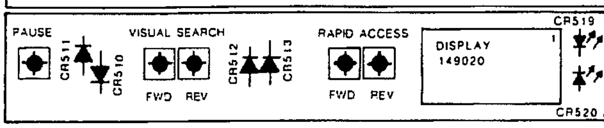
KEY

▲ TEST POINT
▲ TEST POINT - STAKE
TRANSISTOR
G S D — Q3601
C B E — ALL OTHERS

PRINTED IN U.S.A. 1467824-2

TEST POINT AND ACTIVE DEVICE LOCATION





CAUTION– OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

MISE EN GARDE– OBSERVER LES PRÉCAUTIONS NÉCESSAIRES LORS DE LA MANIPULATION DE DISPOSITIFS SENSIBLES À L'ÉLECTRICITÉ STATIQUE.

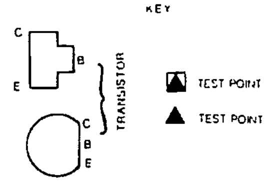
TEST POINTS

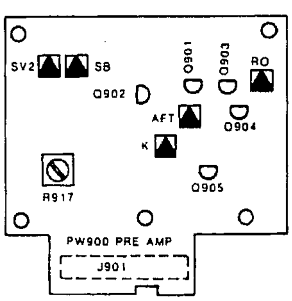
TP501 OPTICAL SWITCH
TP502 LOAD SWITCH INPUT
TP503 OPTICAL SWITCH INPUT
TP504 COMPUTER RESET
TP505 STATUS
TP506 SIDE 2 SWITCH
TP507 SIDE 1 SWITCH
TP508 NOT AUDIO MUTE
TP509 CLOCK · 1.53MHz
TP510 ARM OUTPUT (2)
TP511 7.7 VAC WINDING
TP512 7.7VAC WINDING
TP513 STYLUS POSITION OUT
TP514 STYLUS POSITION REF.
TP515 21VAC WINDING
TP516 21VAC WINDING
TP517 1.53 MHZ
TP518 + 22VDC UNREGULATED
TP519 + 15VDC REGULATED
TP520 VERTICAL DETAIL
TP521 GROUND (2)
TP522 STYLUS KICKER
TP523 260 KHZ (TO ARM)
TP524 SERVO MOTOR
TP525 SERVO MOTOR ·
TP526 NOT SQUELCH
TP527 NOT STYLUS CLEAN
TP528 STYLUS LIFT
TP529 5VDC REGULATED
TP530 STYLUS UP
TP531 BUFFER CONTROL
TP532 NOT STYLUS KICK
TP533 FORWARD
TP534 MOTOR STOP

ACTIVE DEVICES

Q501 KICKER RAMP SWITCH 143794
Q502 KICKER DIRECTION SW.-143794
Q503 KICKER TOP DRIVER-143794
Q504 KICKER BOTTOM DRIVER · 145776
Q505 KICKER TOP OUTPUT · 140129
Q506 KICKER BOTTOM OUTPUT · 140130
Q507 260HKZ BUFFER · 143794
Q508 SERVO FORWARD OUTPUT · 140129
Q509 CLAMP DRIVER · 143794
Q510 CLAMP · 145776
Q511 SERVO FORWARD ENABLE · 143794
Q512 SERVO REVERSE ENABLE · 143794
Q513 SERVO REVERSE SWITCH · 145776
Q514 SERVO REVERSE OUTPUT · 140129
Q515 SQUELCH AMPLIFER · 143794
Q516 STYLUS LIFT DRIVER · 143794
Q517 STYLUS LIFT OUT · 145395
Q518 SERVO FORWARD SWITCH · 145776
Q519 MOTOR STOP OVER-RIDE · 143794
CR501 DISCHARGE PATH · 119597
CR502 + 5VDC BRIDGE · 147015
CR503 + 5VDC BRIDGE · 147015
CR504 +5VDC BRIDGE · 147015
CR505 +5VDC BRIDGE · 147015
CR506 +22VDC BRIDGE · 147015
CR507 + 22VDC BRIDGE · 147015
CR508 +22VDC BRIDGE · 147015
CR509 + 22VDC BRIDGE · 147015
CR510 SWITCH LOGIC · 119597
CR511 SWITCH LOGIC · 119597
CR512 SWITCH LOGIC · 119597
CR513 SWITCH LOGIC · 119597
CR514 FORWARD KICKER SWITCH · 119597
CR515 REVERSE KICKER SWITCH · 119597
CR516 SQUELCH ISOLATOR · 119597
CR517 SQUELCH ISOLATOR · 119597
CR518 SQUELCH ISOLATOR · 119597
CR519 LED SIDE 1 INDICATOR · 149014
CR520 LED SIDE 2 INDICATOR ·149014
CR521 SQUELCH ISOLATOR · 119597
CR522 TRANSIENT PROTECTOR · 119597
CR523 CLAMP · 119597
CR524 CURRENT LIMITING · 119597
CR525 CURRENT LIMITING · 119597
CR526 VOLTAGE DROP 119597
CR527 VOLTAGE DROP · [illegible]
CR528 CLAMP DIODE [illegible]
U501 DECODER LED DRIVER · 143766
U502 COMPUTER · 149015
U503 DAXI BUFFER · 149016
U504 + 5VDC REGULATOR ·149017
U505 QUAD AMP SEP.C/STYLUS KICKER · 149018
U506 STYLUS POSITION DET · 149019
R520 SERVO DET. BALANCE · 146263
LED DISPLAY · 149020

KEY





TEST POINTS

AFT · AUTO. FREQ. TUNING
K · +15V
RO-RESONATOR OUTPUT
SB- SERVO VARACTOR BIAS
SV2 – SERVO VARACTOR DRIVE

ACTIVE DEVICES

Q901 PRE AMP · 141370
Q902 PRE AMP DRIVER · 141370
Q903 AFT DIFFERENTAL COMPARATOR · 143794
Q904 AFT DIFFERENTAL COMPARATOR · 143794
Q905 SEARCH OSC · 149007
R917 SERVO BALANCE 146263

FUSE CHART — TO ACCESS FUSES, REMOVE PW 500

F1-LINE, 1A, SLOW BLOW-426973
F2-TRANSFORMER FUSE, 1/4A, SLOW BLOW-149004

LUBRICATION CHART

149247 RYKON "O" GREASE	FUNCTION LEVER DETENT
149247 RYKON "O" GREASE	TURNTABLE LIFT SLIDER CAM
149247 RYKON "O" GREASE	ARM DRIVE GEARS
149246 DC111 SILICON GREASE	TRANSDUCER RAILS
149063 OMNILUBE 350	MOTOR BEARINGS
149063 OMNILUBE 350	TURNTABLE SHAFT BEARINGS

CAUTION- USE SPECIFIED LUBES ONLY. SUBSTITUTE LUBE MAY DAMAGE OR IMPAIR PROPER OPERATION.

MISE EN GARDE- N'UTILISER QUE LES LUBRIFIANTS RECOMMANDÉS. TOUT AUTRE LUBRIFIANT PEUT ENTRAÎNER DES DOMMAGES OU GÊNER LE BON FONCTIONNEMENT DE L'APPAREIL.

PRINTED IN U S A 146761 1

ELECTRONIC/MECHANICAL SYSTEMS DESCRIPTION
MECHANICAL: Load/Play/End-Of-Play/Unload/Off

Load Sequence
Placing the Function lever in the "Load" position operates mechanical linkage which; opens the caddy entry port door, applies AC power to the player via switch S2, activates a slider cam lowering the turntable, activates a declutch link to disengage the clutch on the reduction gear assembly so the pickup arm can be moved easily (Fig. 1-5).

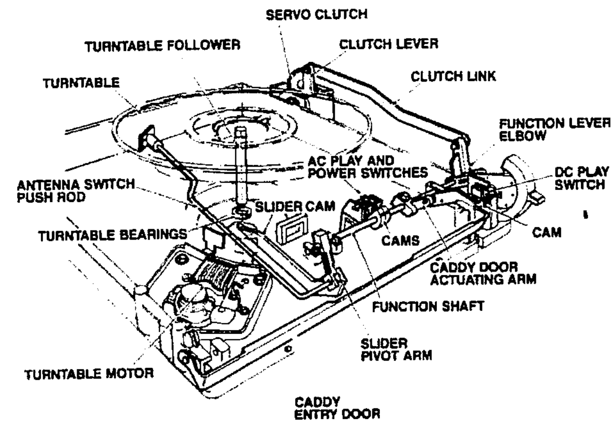


Fig. 1-5. — VideoDisc Player Top View

As a loaded caddy is inserted in the player through the caddy entry port door, the front receiver pads and hold down pads are lowered and raised respectively (pivoted) to allow caddy entry. The pulldown cam, located on the left side of the player mechanism, is activated (raised above the caddy). Activation (rising action) of the pulldown cam lowers the turntable spindle through mechanical linkage allowing the caddy to pass over the turntable spindle. The side indicator switch (S5) is located on the right side of the player mechanism and is activated to indicate whether side 1 or side 2 is being played.

As insertion of the loaded caddy continues it next encounters the left receiver pad which, through mechanical linkage, activates the stylus clean mechanism which will be explained later in the unload sequence. The next portion of the mechanism encountered is the actuating cam for the rear receiver pad, which is also pushed down allowing the caddy to pass over it. The spine latch assembly is pushed down out of the way allowing the caddy to pass over it. As caddy insertion nears completion, the caddy lock defeat assembly tabs enter the end of the caddy on either side unlocking the spine tabs holding the VideoDisc captive in the caddy (Fig. 1-6). At the same time the caddy encounters the sweeper arm assembly pushing it back out of the way, where it remains as long as a disc and spine are in the player. The spine latch assembly, having been pushed down to allow caddy insertion, now raises captivating the spine. The spine, now captivated, actuates spine sense switches S6 and S8 (Fig. 1-10).

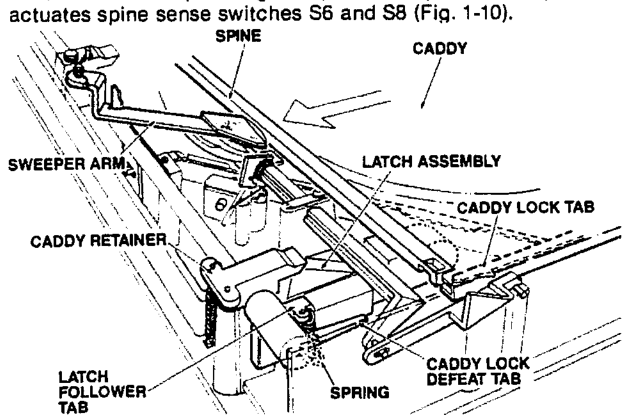


Fig. 1-6. — Caddy Lock Defeat Operation

As the empty caddy is removed leaving the spine and VideoDisc in the player, the caddy lock defeat assembly tabs drop down below the spine to the position necessary for their function during the unload process (Fig. 1-7). As the empty caddy is being removed the rear receiver pad raises to support the VideoDisc, the left receiver pad raises to support the spine, the turntable spindle raises entering the center hole in the VideoDisc and the front receiver pad raises and the front hold down pad lowers to support the spine.

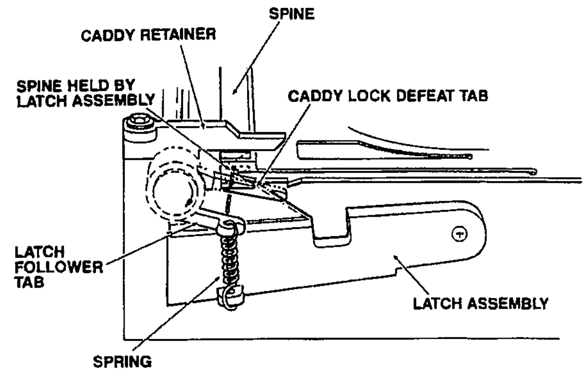


Fig. 1-7. — Spine And Disc In Lock Position

The player is now loaded and ready to be placed in the "Play". mode of operation.

Play Sequence
After the empty caddy has been withdrawn from the VideoDisc player, the FUNCTION lever can then be placed in the PLAY position. This action raises the caddy entry door into place preventing a caddy from being inserted in the machine until the FUNCTION lever is again placed in the LOAD position.

Placing the FUNCTION lever in the PLAY position pushes the slider cam under the turntable shaft causing the turntable to rise and contact the VideoDisc.

Placing the FUNCTION lever in the PLAY position, activates AC play switch, S4, supplying AC power to AC Spine Sense switch, S8, which is activated by the presence of the spine in the player. Power is now available to the turntable motor.

Turntable Drive
After a VideoDisc has been inserted into the player and the FUNCTION lever placed in the PLAY position, AC power is applied to the turntable motor. The turntable motor is a 2-pole shaded pole AC motor. It provides drive via an elastic silicon rubber belt to the turntable. The turntable motor provides the required torque to spin the turntable at approximately 450 rpm. The frequency of the Vertical, Horizontal, Chrominance and Luminance signals is determined by the speed of the turntable. Therefore, it is necessary that the speed of the turntable be synchronized to the frequency of the AC power line. This is accomplished through the use of two magnetic poles on the turntable motor driving a 16 pole magnetic ring located inside the turntable pulley flange (Figure 1-8).

The two magnetic poles on the motor reverse polarity 3600 times per minute. Since there are 16 (or 8 times as many) poles on the turntable as on the motor, the turntable will revolve at 1/8 the motor speed, or 450 RPM. The magnetic turntable ring therefore maintains syncronization between the frequency of the power line and the turntable speed. Syncronization of the turntable speed to the AC power line frequency produces a vertical frequency of 60 Hertz and a horizontal frequency of 15,750 Hertz.

ELECTRONIC/MECHANICAL SYSTEMS DESCRIPTION

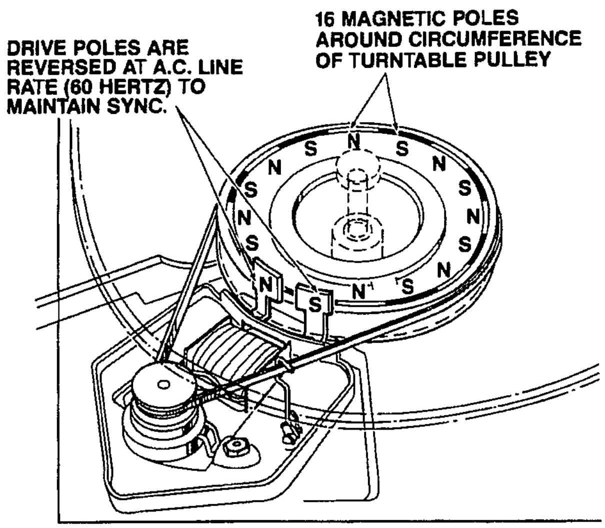


Fig. 1-8. — Turntable Drive Operation

The power line frequency is typically 60 Hz ±.1%. The VideoDisc player, however, is capable of correct operation even if the power line frequency varies by as much as 1% of nominal. This is possible due to the action of the armstretcher and time base correction circuits in the video converter stages.

The FUNCTION lever also closes DC Play switch S3 when placed in the PLAY position. This connects the microcomputer Play Enable line to DC Spine Sense switch S6, previously activated by insertion of the disc and spine in the player. This action grounds the Play Enable input to the microprocessor through S3 and S6, placing a logic "Lo" at the microcomputer input. Logic "Lo" at this point instructs the microcomputer that all criteria for starting the player have been met and the PLAY operation can now begin. After a delay of approximately seven seconds, to allow the turntable to reach 450 rpm, the microcomputer instructs the stylus to be lowered onto the disc.

In the Play mode, the reduction gear assembly clutch is engaged allowing the servo motor to have total control over movement of the pickup arm assembly.

End-of-Play

After one side of the VideoDisc has been played, the time indicator will flash an "E", indicating the pick-up arm is at the end of the VideoDisc program. The function lever may then be placed in the "Load" position (to remove the VideoDisc just played).

Unload Sequence

To remove the VideoDisc and spine from the player:

Place Function Switch in "Load" position. Insert empty caddy through the caddy entry port door in the same manner used when player was loaded. The same series of events will occur as occurred during the "Load" sequence with the following exceptions.

When the VideoDisc reaches "End of Play" the pickup arm assembly will be at its innermost position (center of disc). The empty caddy contacts the pickup arm pushback assembly allowing the caddy to push the pickup arm back to its outermost position. When the pickup arm reaches its outermost position, a landing adjust set screw, in the base assembly, contacts a pushrod releasing the pickup arm pushback assembly tab allowing the tab to swing free as the empty caddy continues to be inserted.

The empty caddy then contacts the caddy lock defeat tabs (these are the tabls utilized to release the spine from the caddy during the "Load" operation and dropped down as the caddy was removed), pushing the tabs down onto the spine latch assembly (Fig. 1-9). This forces the spine latch assembly to release the spine as the empty caddy is inserted. Push back springs force the spine and disc back into the empty caddy locking it securely. The caddy, with the spine and disc locked securely inside, can now be removed.

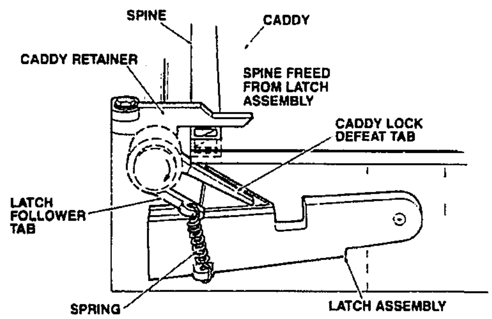


Fig. 1-9. — Unload Operation

Removing the loaded caddy slowly, the sweeper arm swings under the stylus into a "cocked" position (Fig. 1-10). Spine sense switches S6 and S8 are opened. As the loaded caddy continues to be removed slowly, the left receiver pad cam begins to rise. As it rises it activates stylus clean switch S7, causing the stylus to be lowered onto the stylus sweeper arm pad. There is an idle taper to the left receiver pad cam. The stylus is being lowered onto the sweeper arm pad during the time the caddy is travelling along the idle taper. When the caddy reaches the end of the idle taper, the left receiver pad cam reaches a point where, through mechanical linkage, the sweeper arm is released from its "cocked" position wiping the dirt from the stylus. At the same time, stylus clean switch S7 opens allowing the stylus lifter circuit to lift the stylus back up into the stylus cartridge for protection.

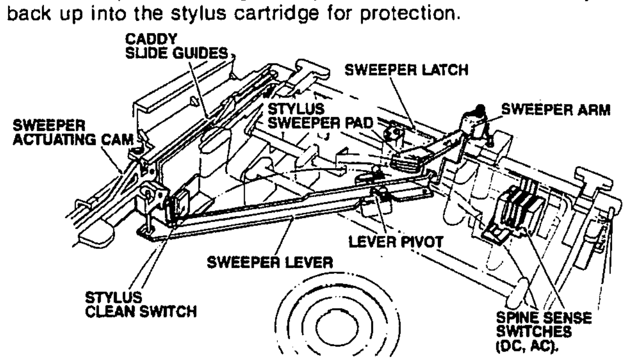


Fig. 1-10. — Sweeper Operation

After the loaded caddy has been removed it may be turned over and the player re-loaded to play the other side of the VideoDisc. **DO NOT** leave the player in the "load" mode for any extended period of time. Dust or other contaminates could enter the mechanism through the open caddy entry port door and cause damage to the unit.

Off Position

Placing the FUNCTION lever in the "off" position opens AC Power switch S2. This will interrupt the AC input power to the player, the turntable will not rotate and the B+ supplies to the electronic circuits will be disabled. A spring on the antenna switch switches the RF output connector back to the external TV antenna connection when the FUNCTION lever is placed in the "Off" mode.

INSTRUMENT DISASSEMBLY

Stylus Cartridge Removal

1. Press auxiliary door release button at rear of player (Fig. 1-1), auxiliary door will pop up for removal (Player function lever must be in "off" position).
2. With pickup arm pushed to the rear as far as possible — open stylus cartridge retaining lid and remove stylus cartridge by lifting it straight up and out of pickup arm assembly (Fig. 2-1). Carefully handle cartridge by grasping sides! **Do Not** touch stylus.

To replace stylus cartridge reverse procedure.

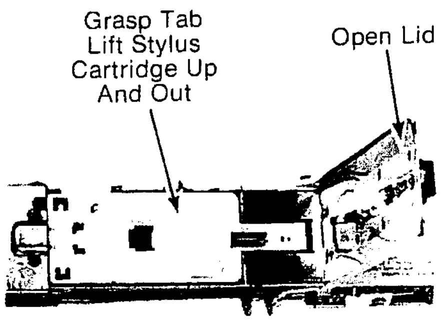


Fig. 2-1. — Stylus Removal Access

Top Cover Removal

1. Place player, bottom up, on a soft surface.
2. Remove 7 each 1/4" hex head screws (Fig. 2-2) around outer edge of cabinet bottom.
3. Carefully turn player over, top up and remove 3 each — phillips head screws from rear of cabinet top (Fig. 1-1).
4. Remove top cover — lift up and forward slightly so as to clear function lever, cover should then be clear to lift straight up and off player.

To reassemble reverse procedure.

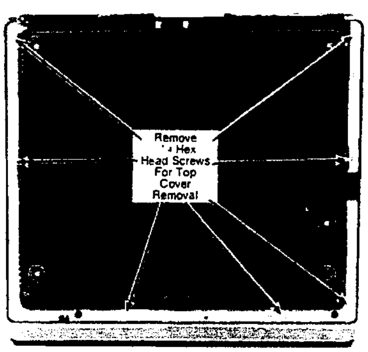


Fig. 2-2. — Top Cover Removal

Bottom Cover Removal

1. With top cover removed — place player (bottom up) on a soft surface.
2. Remove 4 each phillips head screws (Figure 2-3).
3. Remove cabinet bottom — lift front slightly and move cabinet bottom to rear slightly so as to clear antenna "F" connectors and channel switch before removing cabinet bottom completely.

To reassemble reverse procedure.

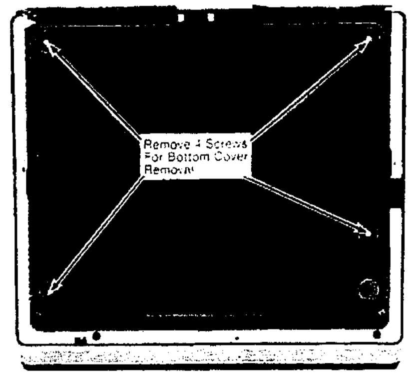


Fig. 2-3. — Bottom Cover Removal

Pick-up Arm Assembly Removal

1. Remove stylus cartridge and set aside to avoid possible damage to stylus.
2. Push pick-up arm assembly to rear of player as far as possible and remove P901.
3. Remove 2 each 1/4" hex head screws and remove landing latch assembly as a complete assembly (Figure 2-4).
4. Remove 4 each 1/4" hex head screws (2 on either side of PW500) and remove PW500 cricuit board assembly from player and lay over to right side.
5. Loosen 1/4" hêx head screw at front end of pick-up arm carriage shaft.
6. Lift up on right side of pick-up arm assembly remove pick-up arm carriage shaft from front retaining area by sliding it to the rear slightly. Move pick-arm assembly to the right slightly to free roller (on left side of pick-up arm assembly) from rail cap. Remove arm assembly from player.

   To reassemble reverse procedure.

7. See Radius Sensor adjustment page 3-12.

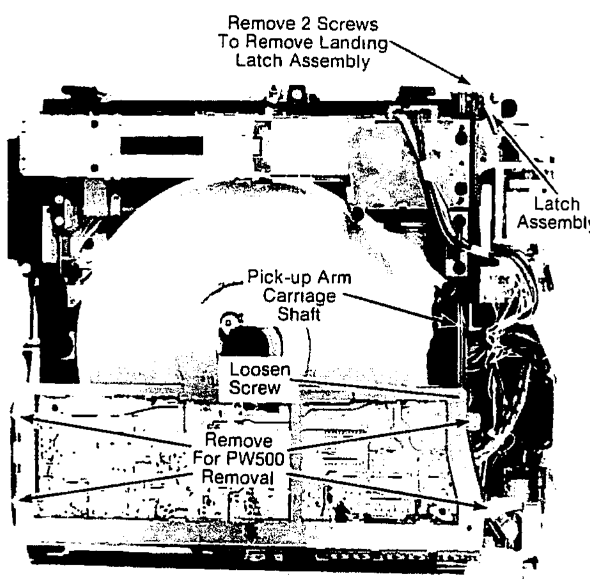


Fig. 2-4. — Pick-up Arm Assembly Removal

INSTRUMENT DISASSEMBLY
(continued)

Transducer Assembly Removal

1. Remove 2 each phillips head screws from either side of transducer assembly cover and remove cover (Fig. 2-5).
2. Remove transducer actuating spring (item 103) by compressing and lifting out of arm.
3. Unsolder and remove transducer leads. Slide transducer out to left of arm assembly. Lift up on end of transducer to clear arm housing and remove transducer from arm assembly.

   To reassemble reverse procedure.

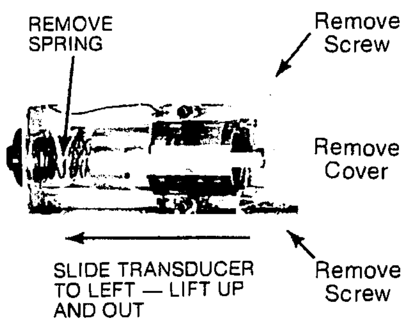


Fig. 2-5. — Transducer Removal

Turntable Removal

With cabinet top removed and PW 500 circuit board assembly laid to right side of player proceed to remove turntable in the following manner (Fig. 2-6).

1. Remove front receiver hold down pad (item 81) by first removing "C" clip retainer (item 68). Slide hold down pad to left to free right end, then lift up on right side and slide pad back to the right to free the left end remove pad from player.
2. Remove 2 each phillips flat head screws (item 30) holding turntable yoke assembly (item 28) in position.
3. Remove yoke assembly (item 28), spindle cap (item 26), spindle cap washer (item 27), and spindle shaft spring (item 29).
4. Lift turntable (item 1) up and remove from player. Care is required in this procedure because the turntable drive belt (item 39) will want to lift up with the turntable.

   To reassemble reverse procedure.

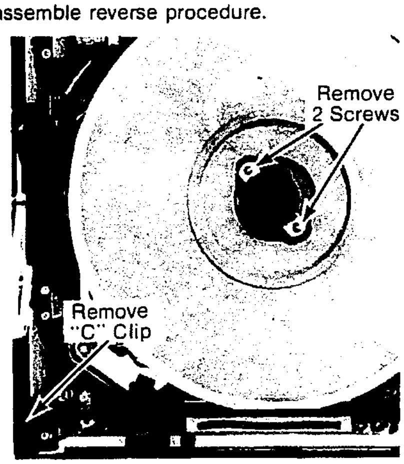


Fig. 2-6. — Turntable Assembly

Note: When reassembling turntable be certain drive belt is positioned correctly around lower outer edge of turntable and turntable drive motor pulley. Also be certain the drive belt is positioned correctly in the Belt Guide (item 6) located on the turntable drive motor assembly (B1).

Turntable Drive Motor Removal

With top cover, pick-up arm assembly, and turntable removed.

1. Remove 3 each hex head screws (Fig. 2-7).
2. Disconnect drive motor assembly (B1) wires from PW AC input circuit board assembly.
3. Lift drive motor assembly (B1) up and out of centerplate.
   To reassemble reverse procedure.

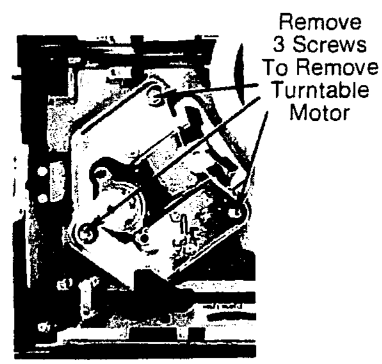


Fig. 2-7. — Turntable Drive Motor Removal

Reduction Gear Assembly Removal

With Pick-Up Arm Assembly removed:

1. Unsolder and remove servo drive motor wires (Fig. 2-8).
2. Remove declutch link from Reduction gear Assembly by first removing "C" clip retainer (item 68).
3. Remove 2 each 1/4" hex head screws at rear of reduction gear assembly. Loosen 2 each 1/4" hex head screws at front of reduction gear assembly.
4. Slide reduction gear assembly to the rear and remove from center plate.

   To reassemble reverse procedure.

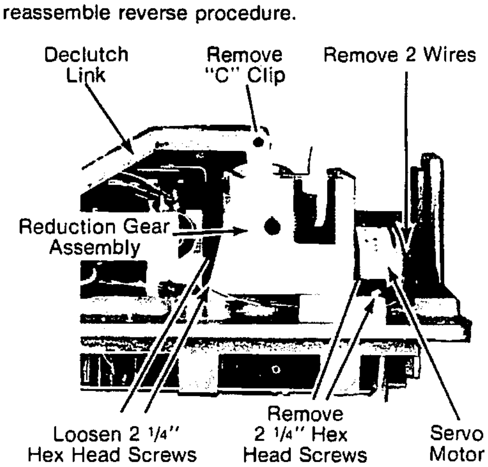


Fig. 2-8. — Reduction Gear Assembly Removal

INSTRUMENT DISASSEMBLY
(continued)

Reduction Gear Assembly Disassembly

With reduction gear assembly removed from centerplate (Fig. 2-9):

1. Remove 2 each "C" clip retainers (item 111) from front and rear of reduction gear shaft (item 107).
2. Remove 3 each phillips head screws (1 in front, 2 in rear) from assembly.
3. Separate front and rear halves (items 104 and 105) of reduction gear assembly and remove clutch assembly (item 106) and reduction gear (item 107).
4. Remove servo drive belt (item 109).
5. Remove pinion gear retainer (item 110) and pinion gear (item 108).
6. Remove 2 each 3/16" hex head screws and servo motor (B2).

To reassemble reverse procedure.

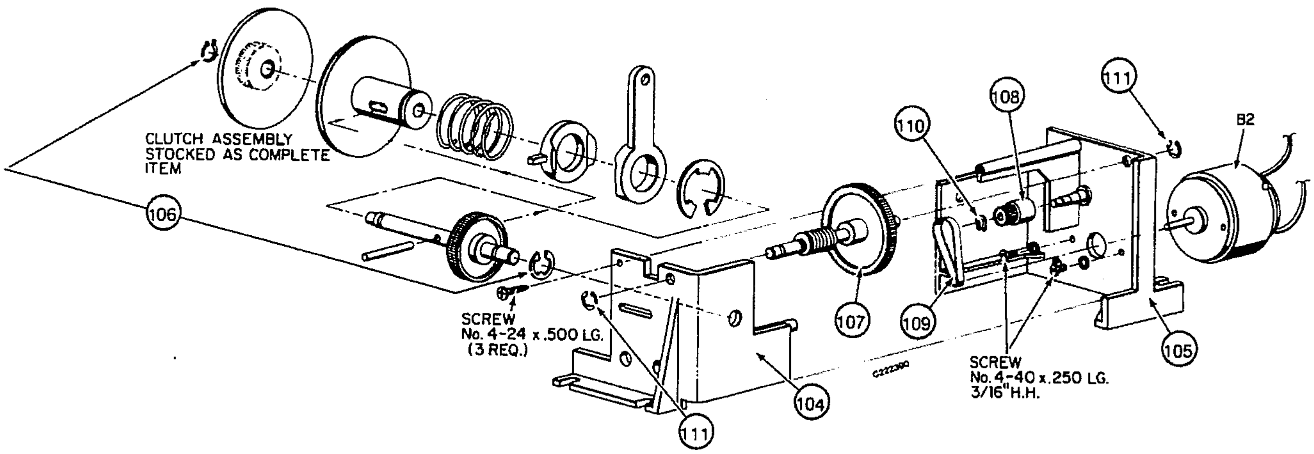


Fig. 2-9. — Reduction Gear Assembly Exploded View

PW3000 Circuit Board Removal

With cabinet top and bottom removed and player laying on soft surface bottom up:

1. Remove 6 each 1/4" hex head screws from PW3000 circuit board.
2. Remove PW3000 circuit board from center plate and swing out to side.
3. Turn player over carefully with top up and rotate PW3000 180° with component side up and board laying out to right side of player. PW3000 circuit board is now in service position.

To reassemble reverse procedure.

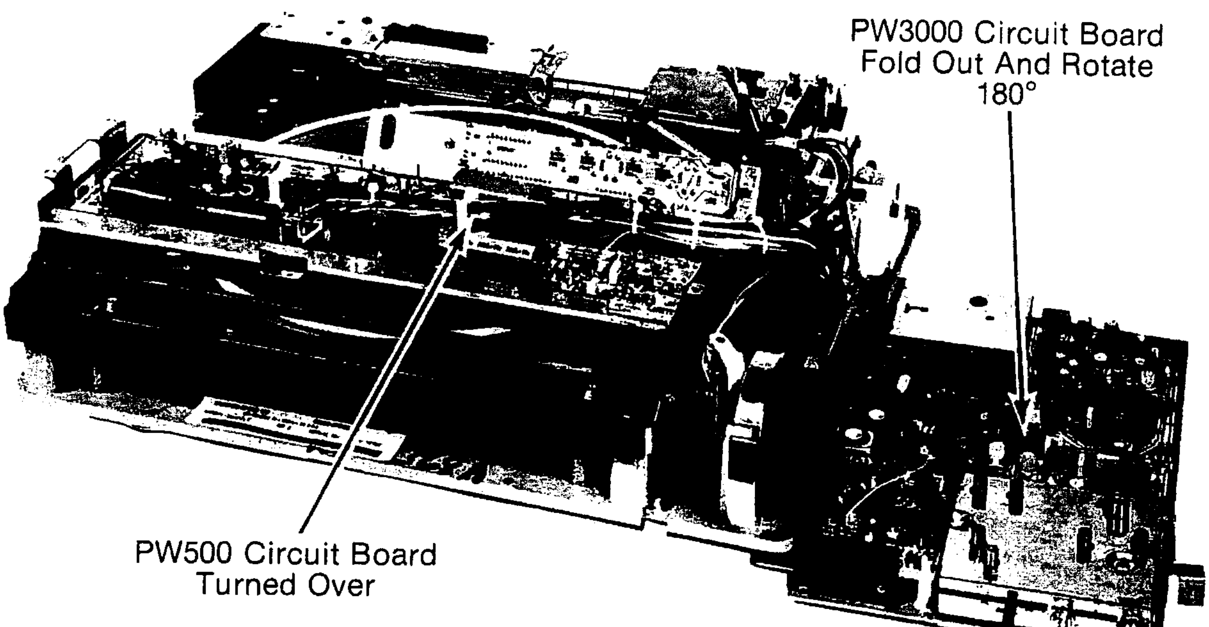


Fig. 2-10. — VideoDisc Player Service Position

INSTRUMENT DISASSEMBLY
(continued)

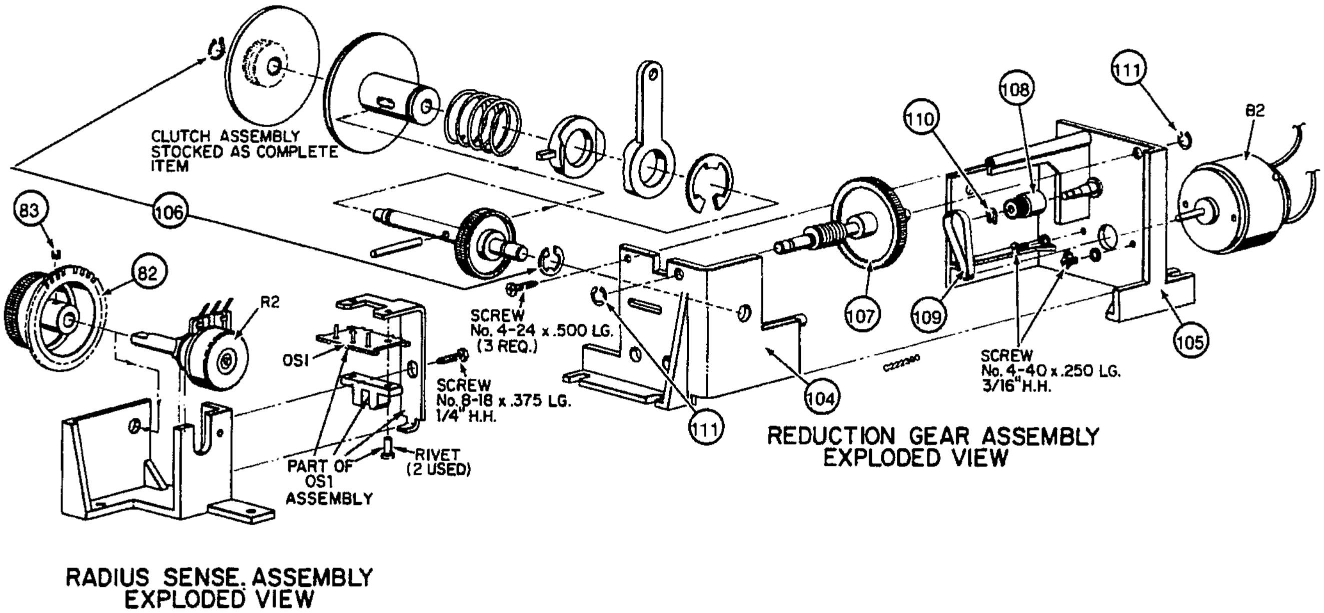


Fig. 2-11. — Radius Sensor And Reduction Gear Assembly Exploded View

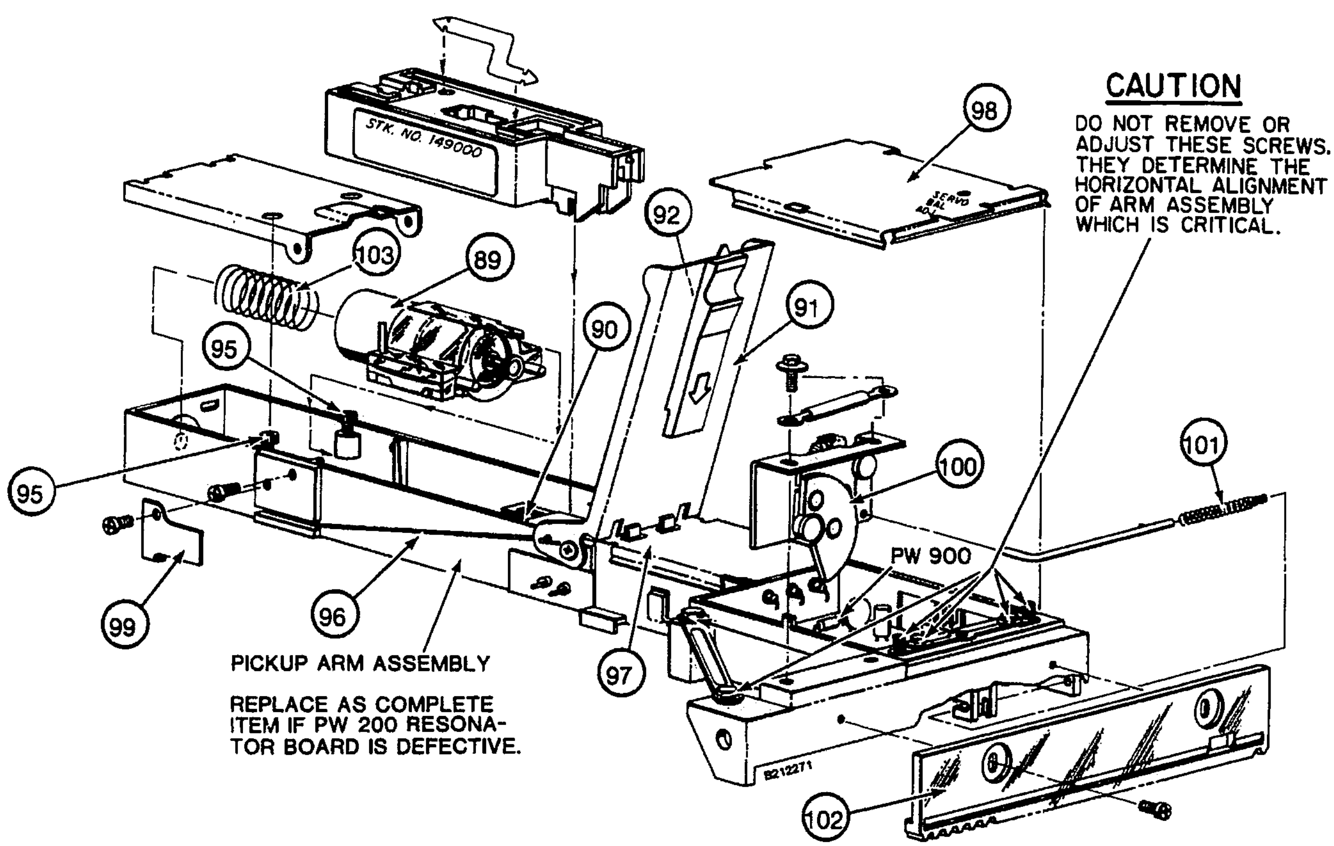


Fig. 2-12. — Pick-up Assembly Exploded View

MECHANICAL ADJUSTMENTS

Stylus Set Down Adjust

With player connected to monitor:

1. Insert test disc (Stock No. 149235) in player.
2. Place Function Switch in "Play" position.
3. Check monitor TV display. Stylus must land so that display on monitor reads "X" ± 5 seconds.

   NOTE: "X" is nominal landing time (in seconds) for each test disc. The exact value of "X" (seconds) depends on the diameter of the first groove on the Test Disc. The diameter (in inches) of the first modulated groove is marked on each Test disc caddy label.

   Use the following formula to determine the exact value of "X" in Seconds.

   "X" = (diameter of first modulated groove − 11.483 inches) (642)

   EXAMPLE:

   "X" = (11.558" − 11.483" (642)
   "X" = (.075) (642)
   "X" = 48.150 seconds.

   If monitor displays 51 seconds as setdown time. Stylus setdown would be within the required ± 5 second setdown time and would require no adjustment.

4. Adjust landing screw (Fig. 3-1) and recheck set-down as necessary.

   NOTE: Landing screw is an allen head set screw (.078") accessable through hole in rear of cabinet. When replacing arm assembly or stylus cartridge it is advisable to first adjust screw inward approximately 2 to 3 turns (1 turn = approximately 1 minute play time) then adjust screw out to proper stylus landing position.

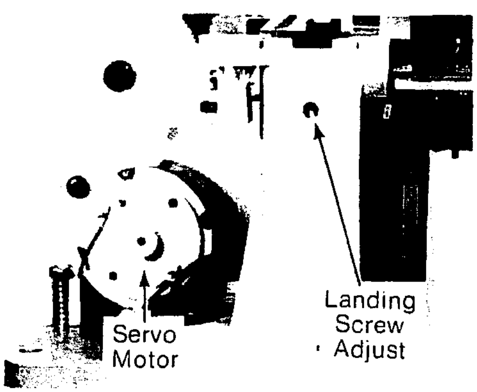


Fig. 3-1. Landing Screw Adjust

Slider Cam Adjust

Proper positioning of the slider Cam is extremely important. It is the main mechanical timing adjustment on which all other mechanical adjustments are based. Therefore this adjustment must be checked or performed prior to all other mechanical adjustments.

1. Place function lever in "Load" position.
2. Loosen 1/4" hex head screw in slider cam actuating pivot arm (Fig. 3-2).

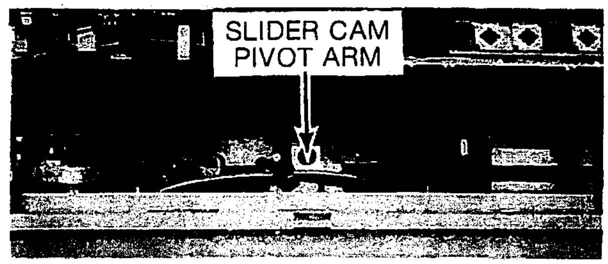


Fig. 3-2. Slider Actuating Pivot Arm

3. Position pivot arm so that the turntable shaft follower (item 24) is approximately 1/16 of an inch from the end of the slider Cam (item 31). lowest level. Tighten hex head screw in pivot arm (Fig. 2-13).
4. Place function lever in "PLAY" position. Check that turntable shaft follower is resting on the flat surface (highest level) of the slider Cam (item 31). The turntable shaft follower (item 24) must not rest on the slope portion of the slider Cam (item 31) in either the "LOAD" or "PLAY" mode.

Caddy Entry Door Adjust

1. Place function lever in "LOAD" position.
2. Loosen 1/4" hex head screw in caddy door actuating pivot arm (item 14) Figs. 3-3 & 2-13.
3. Position pivot arm so that caddy door (item 51) just clears caddy entry. Tighten 1/4" hex head screw.
4. Place Function lever in "PLAY" position. Check that caddy entry door (item 51) blocks caddy entry.
5. Place Function lever in "OFF" position. Caddy entry door should travel an additional 1/16" (approximately) to completely block caddy entry opening without binding.

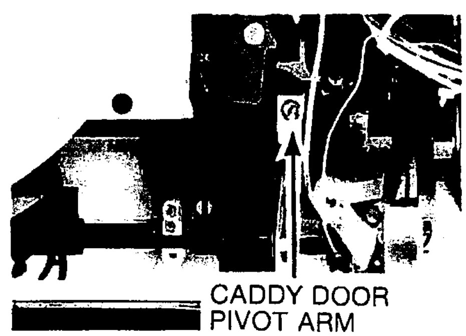


Fig. 3-3. Caddy Door Actuating Pivot Arm

ANTENNA PUSH ROD CAP ADJUST

With cabinet bottom removed:

1. Place function switch lever in "off" position.
2. Loosen Allen set screw (.050") (item 35) in antenna push rod cap (item 34). Position push rod cap so that antenna switch (on PW3000 circuit board assembly) just bottoms out.

MECHANICAL ADJUSTMENTS (continued)

3. Check antenna switch action by placing function lever in "off" position and then in "play" position to be certain antenna switch is operating properly (Figs. 3-4 & 2-13).

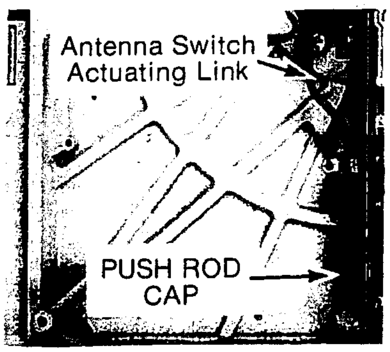


Fig. 3-4. Antenna Push Rod Cap

S2 AC Power "ON" Switch Cam Adjust

1. Place function switch lever in "off" position.
2. Loosen allen head set screw (.050") in S2 cam (item 19) and position cam so that switch S2 is just turned "off" and tighten set screw, Figs. 3-5 & 2-13.
3. Place function switch lever in "Play" position and check that switch S2 is "on".

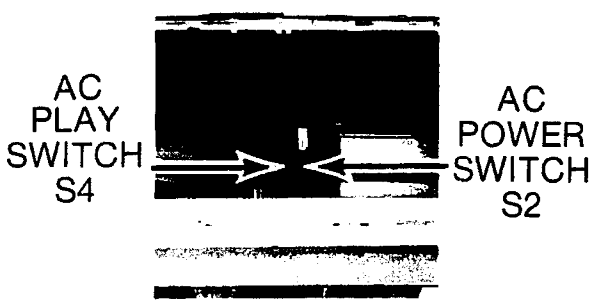


Fig. 3-5. AC Power Switch Cam

S3 DC Play Switch Cam Adjust

1. Place function switch lever in "Play" position.
2. Loosen allen head set screw (.050") in S3 cam (item 71) and position cam so that switch S3 is "on" and tighten set screw, Figs. 3-6 & 2-13.
3. Place function switch lever in "Load" position, switch S3 should be "off". Place function switch lever in "Play" and "off" positions - Switch "S3" should be "on".

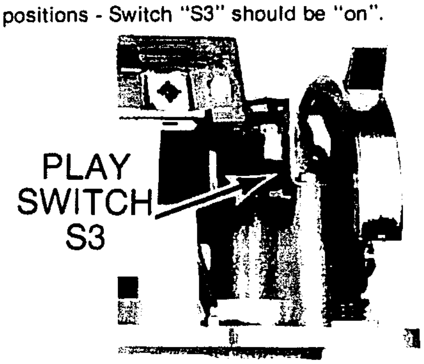


Fig. 3-6. DC Play Switch Cam

S4 AC Play Switch Cam Adjust

Use same procedure as set forth for S3 DC Play Switch, Figs. 3-5 & 2-13.

Radius Sensor Assembly

When replacing pickup arm assembly, be certain pickup arm is in it's outermost position and the radius sensor assembly is almost in the full counterclockwise position, Figs. 3-9 & 2-11.

NOTE: Rotate radius sensor gear full counterclockwise. Just before meshing radius sensor gear and pickup arm gear rack rotate radius sensor clockwise about 2 to 3 gear teeth. **DO NOT** completely bottom out radius sensor gear.

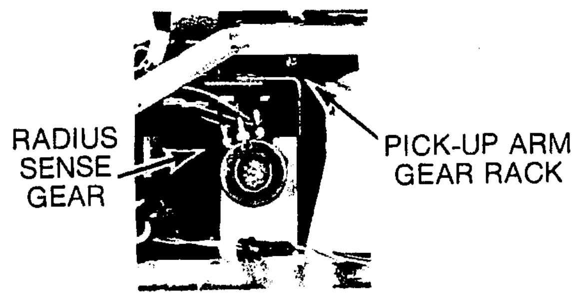


Fig. 3-7. Radius Sensor Assembly

Turntable Height Adjust

To check turntable height - remove stylus cartridge from pick-up arm assembly, insert turntable height gauge (Stock No. 149239). Place disc in player in "PLAY" mode with AC cord removed from power source. Hold height gauge in arm assembly firmly - be sure plunger is free to indicate properly, Fig. 3-8.

CAUTION: Use old disc or reserve one side of test disc for this procedure. **DO NOT** use a good disc for this procedure.

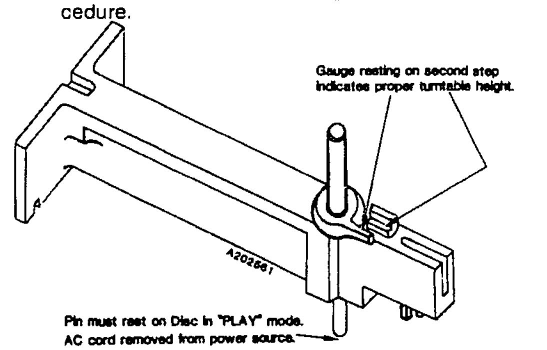


Fig. 3-8. Turntable Height Gage

1. If gauge remains on lowest step — Remove yoke assembly and spindle, raise turntable height by adjusting turntable height adjust screw clockwise (item 2 Fig. 3-9). Replace spindle and yoke assembly.
2. If gauge moves to highest step — Remove yoke assembly and spindle, lower turntable height by adjusting turntable height adjust screw counterclockwise (item 2, Fig. 2-13). Replace spindle and yoke assembly.
3. Proper turntable height — when gauge is on center step of height gauge turntable is at correct height.

NOTE: Turntable height adjust is a allen head screw accessible from top with long portion of extra long (.125") allen wrench. **DO NOT** mar the inside of turntable spindle during this adjustment.

MECHANICAL ADJUSTMENTS
(continued)

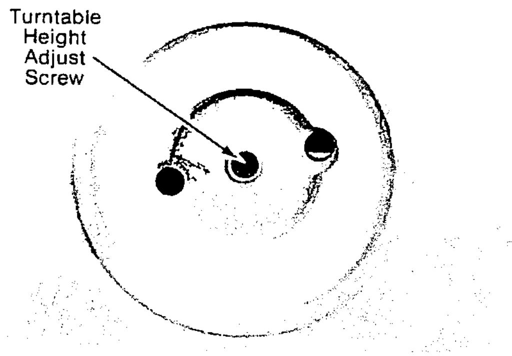


Fig. 3-9. Turntable Height Adjust Screw

Stylus Cleaner Adjust

1. Remove stylus cartridge from pickup arm assembly and store in safe place to prevent damage to stylus.
2. Insert caddy in player.
3. Slowly remove loaded caddy observing action of left receiver pad and sweeper actuating cam (item 12) and stylus lifter in arm assembly, Figs. 3-10 & 2-13.
4. As caddy is being removed and it just clears the slope of the highest portion of actuating Cam (item 12), sweeper switch S7 should be actuated (turned on) causing stylus lifter (in pickup arm assembly) to lower. If this does not occur position switch S7 so that it does occur.
5. Continue removing caddy slowly — as caddy just clears the idle slope of actuating Cam (item 12), the sweeper arm should trip to clean the stylus. If the sweeper arm does not trip at this point adjust screw (item 13) to make it happen.
6. As caddy clears actuating Cam, just after sweeper arm trips, the stylus lifter should raise.

NOTE: Switch S7 controls stylus lifter action during this function and adjustment of actuating Cam adjustment screw (item 13) controls tripping of sweeper arm (item 9).

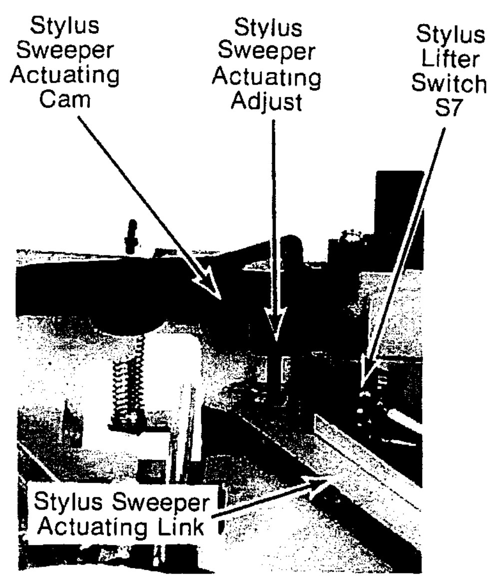


Fig. 3-10. Sweeper Actuating Cam

Spine Sense Switches S6 & S8

Spine sense switches S6 & S8 should be in the "ON" state anytime a disc and spine are present in the player If necessary, bend forward slightly the tab portion of the switches which contact the spine, Fig. 3-11.



Fig. 3-11. Spine Sense Switches

Spindle Pulldown Adjust

Adjust spindle pulldown lever link (item 37) so that spindle retaining yoke assembly (item 28) bottoms out, just touches turntable as loaded caddy is being inserted into the player. Clockwise rotation of lever link (item 37) pulls yoke assembly toward turntable, Figs. 3-12 & 2-13.

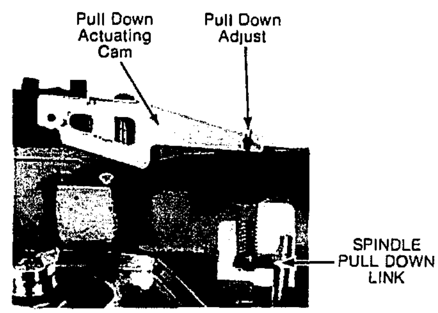


Fig. 3-12. Spindle Pulldown Link

Transducer Adjustment

Remove transducer cover and actuator link. Transducer hold-down screws should be sufficiently loose to allow transducer to slide freely (Fig. 3-13).

1. Push transducer against actuating spring as far as it will travel. Tighten one screw until transducer is locked in position. Loosen screw slowly until the spring is just able to push the transducer to its full travel in the opposite direction.
2. Without changing position of the screw adjusted in step 1, repeat the same process for the remaining screw. (See Lubrication page 3-4).



Fig. 3-13. Transducer Assembly

LUBRICATION

Function Lever Detent
Use Stock No. 149247 Rykon "O" Grease sparingly on Function Lever Detent.

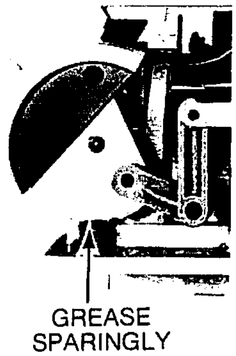


Fig. 3-14. Function Lever Detent

Turntable Lift Slider Cam
Use Stock No. 149247 Rykon "O" Grease sparingly on Turntable Lift Slider Cam.



Fig. 3-15. Turntable Lift Slider Cam

Arm Drive Gears
Use Stock No. 149247 Rykon "O" Grease sparingly on Arm Drive Gears.



Fig. 3-16. Arm Drive Gears

Motor Bearings
Use Stock No. 149053 Omnilube 350 oil sparingly on Turntable and Servo Motor bearings.

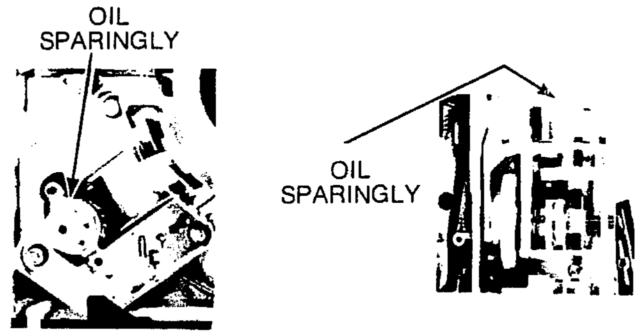


Fig. 3-17. Turntable And Servo Motors

Turntable Shaft Bearings
Use Stock No. 149053 Omnilube 350 oil sparingly on Turntable Shaft Bearings.

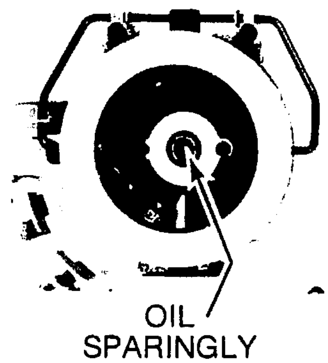


Figure 3-18. Turntable Shaft Bearings

Transducer Assembly
Use Stock No. 149248 DC111 Silicone Grease sparingly (thin even coat) on Transducer Assembly.

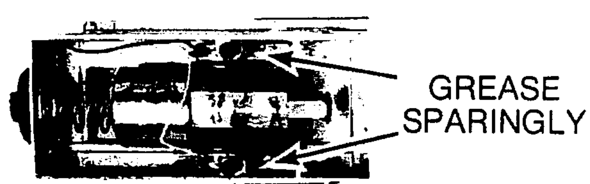


Fig. 3-19. Transducer Assembly

ELECTRICAL ADJUSTMENTS

Test Equipment Required:

Test Equipment	**Specifications**
Digital Voltmeter	Range: .1V DC to 30V DC Accuracy: ± 1%
Oscilloscope	Triggered Response: DC −20 MHz. Sensitivity: 5mV/cm Maximum Sweep Rate: .1μS/cm
Frequency Counter	Range: 50 Hz to 100 MHz. Sensitivity: 25mV to 5V
VideoDisc	Test Disc: Stock No. 149235
Color TV Receiver	Standard NTSC
Marker Generator	Range: Crystal Calibrated from 19 to 262 MHz.
Alignment Tool	Must have .056" square end (GC No. 9440 or equivalent)
Alignment Tool	2.5mm non-metallic female Hex Head adjustment tool

ELECTRICAL ADJUSTMENTS
(continued)

Servo Position Adjust (R520)

1. Short TP 510 (arm output) to TP 521 (Ground)
2. Connect DVM from TP 513 to TP 514 (Fig. 4-1).
3. Adjust R520 for less than 5 millivolts.
4. Remove short from TP 510 to ground.

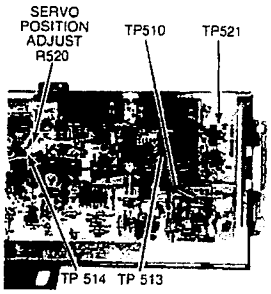


Fig. 4-1. — Servo Position Adjust

NLAC Adjust (R713 and C710)

Use test disc Stock No. 149235 on Band L (20 IRE Gray Field with 480 Hz, 100% modulation on audio carrier).

1. Place player in "pause" mode.
2. Connect DC voltmeter to test stake PW 700-CV (Fig. 4-2).
3. Adjust R713 to produce 9.5V D.C. reading.
4. Connect D.C. voltmeter to test stake TP 701.
5. Short wiper of R713 to ground with cliplead.
6. Place player in "play" mode and check that Band L is being played.
7. Adjust C710 for minimum voltage at TP 701.
8. Remove cliplead.

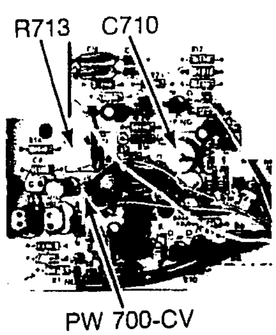


Fig. 4-2. — NLAC Adjust

Arm Servo Balance Adjust (R917)

Player should be in normal play mode with a standard disc at approximately 30 minutes play time (30 showing on readout indicator), when making this adjustment.

1. Connect oscilloscope, to TP 532 (scope set to .1mS/Div. 2V p-p) Fig. 4-3.
2. Alternately press Visual Search "FWD" and Visual Search "REV" buttons for several seconds.

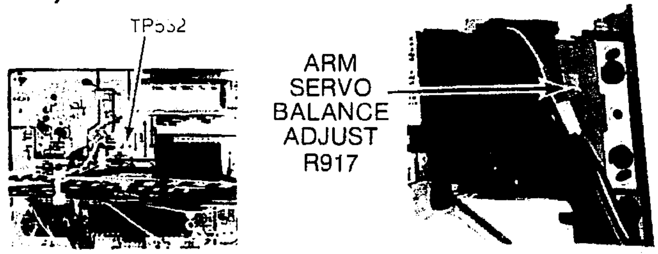


Fig. 4-3. — Servo Balance Adjust

3. Adjust arm servo balance control (R917 on pick-up arm assembly) until width of kick pulse is approximately the same in both Visual Search "FWD" and "REV" modes (approximately 450 to 750 uS width negative pulse). (See Fig. 4-4)

Note: Misadjustment of arm servo balance adjustment (R917) or Servo Position Adjust (R520) could result in loss of Visual Search in one direction.



Fig. 4-4. — Servo Balance Adjust Pulse

Video Demodulator VCO Adjust

1. Disconnect interconnect plug P3002 (Fig. 5-2).
2. Short the two pins of J3002 together.
3. Connect Frequency Counter via X10 probe (see note) to TP 3202.
4. Adjust C3215 for 5.25 MHz ±50 kHz.
5. Remove short from the two pins of J3002 and reconnect P3002.

Note: Typical capacity of X10 probe and counter is approximately 20-25pf. A X1 probe (typical capacity of approximately 100pf) may be used with a 33pf capacitor is placed in series with probe. This will place a load on the VCO of approximately 25pf.

Audio Demodulator VCO Adjust

1. Disconnect interconnect plug P3002 (Fig. 5-2).
2. Short the two pins of J3002 together.
3. Connect frequency counter via X10 probe (see note) to TP 3602.
4. Adjust C3607 for 716 kHz ±2 kHz.
5. Remove short from the two pins of J3002 and reconnect P3002.

Note: Typical capacity of X10 probe and counter is approximately 20-25pf. A X1 probe (typical capacity of approximately 100pf) may be used with a 33pf capacitor is placed in series with probe. This will place a load on the VCO of approximately 25pf.

ELECTRICAL ADJUSTMENTS
(continued)

Video Level Adjust

1. Use Test Disc 100 IRE white field signal (Segment E).
2. Connect oscilloscope to TP 3401 (Figs. 4-9 & 5-2).
3. Adjust R3202 (video level adjust) to produce 2.8V p-p response.

Luminance Channel Null Adjust

1. Use Test Disc color bar signal (Segment D).
2. Connect oscilloscope to TP 3302 (Figs. 4-9 & 5-2).
3. Adjust R3328 for minimum chroma information (Fig. 4-5).

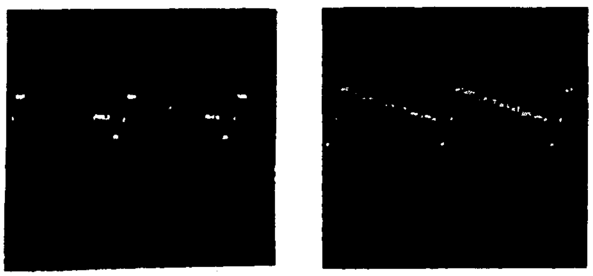


Fig. 4-5. — Waveforms Luminance Null Adjust

Chroma Channel Null Adjust

1. Use Test Disc color bar signal (Segment D).
2. Connect oscilloscope to TP 3303 (Figs. 4-9 & 5-2).
3. Adjust R3329 for minimum p-p signal (Fig. 4-6).

Note: Repeat Video Level Adjustment after completion of Luminance Channel Null and Chroma Channel Null adjustments.

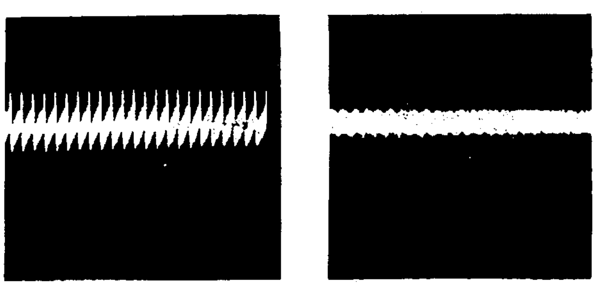


Fig. 4-6. — Waveforms Chroma Null Adjust

Vertical Detail Level Adjust

1. Use Test Disc color bar signal (Segment D).
2. Connect oscilloscope to TP 3301 (Figs. 4-9 & 5-2).
3. Adjust R3317 so that the pulse level matches **before** and **after** transition from vertical equalizing pulses to Vertical sync pulses (Fig. 4-7).

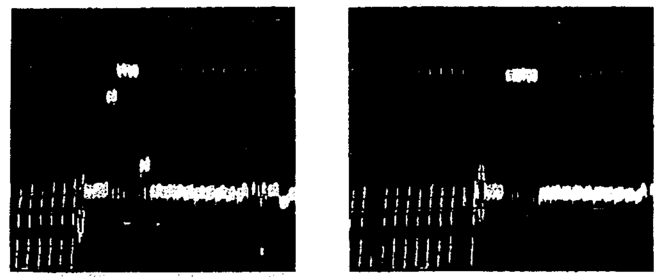


Fig. 4-7. — Vertical Equalizing-Vertical Sync Pulses

Chroma Level Adjust

1. Use Test Disc color bar signal (Segment D).
2. Connect oscilloscope to TP 3409 (Figs. 4-9 & 5-2).
3. Adjust R3312 so that the p-p level of color reference burst and sync tip to blanking are the same (Fig. 4-8).

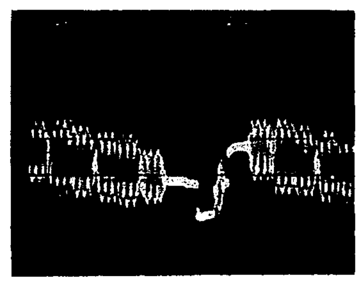


Fig. 4-8. — Color Burst/Sync Tip To Blanking Level

Defect Substitution Level Adjust

1. Use Test Disc 5 step linearity signal with 50 uS defect (Segment H).
2. Connect Disc player to TV set. Locate defect (Line No. 130) by rotating R3304 to one end of rotation (Figs. 4-9 & 5-2).
3. Adjust R3304 for proper substitution to make defect disappear (adjust for best picture).

Armstretcher Gain Adjust

1. Connect player to TV.
2. Use Test Disc and play innermost band, 60 minute area (Segment S).
3. Connect a 7500 ohm resistor between TP 3405 and TP 3411 (Figs. 4-9 & 5-2).
4. Rotate R3444 fully CCW. Adjust R3444 CW for no oscillation (wiggles or horizontal color bands) in the picture.
5. Remove 7000 ohm resistor.

ELECTRICAL ADJUSTMENTS
(continued)

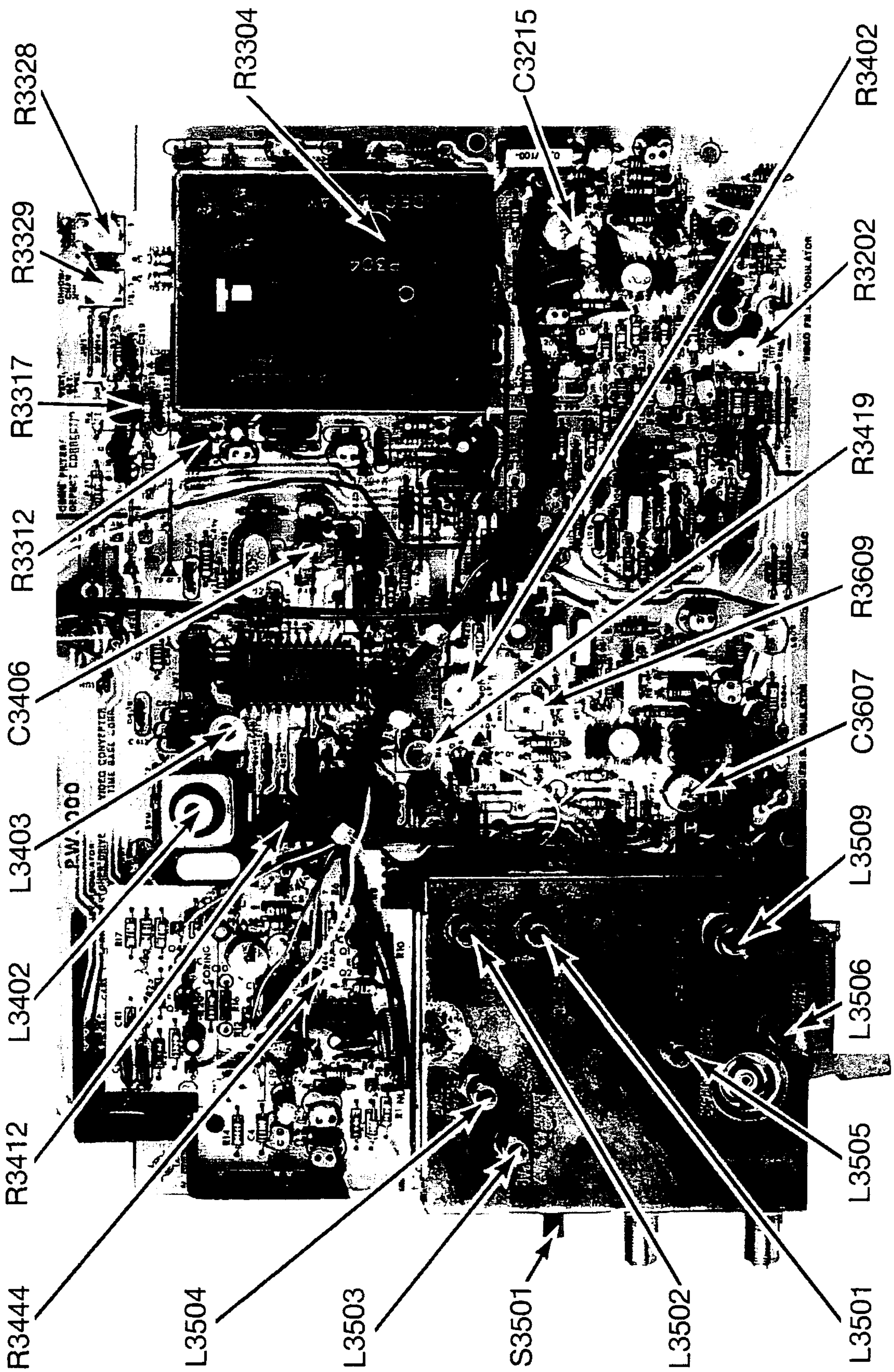


Fig. 4-9. — PW 3000 Circuit Board Electrical Adjustments

ELECTRICAL ADJUSTMENTS (continued)

R.F. Output Channel Oscillator Adjust

1. With power applied to player, place Channel Switch, S3501, in Channel 3 position (Figs. 4-9 & 5-2). Connect player to TV or 75 ohm load.
2. Connect marker generator (R. F. input) to TP 3501 and adjust for 61.25 MHz output.
3. Adjust L3501 for zero beat.
4. Place Channel Switch, S3501, in Channel 4 position.
5. Connect marker generator (R. F. input) to TP 3502 and adjust for 67.25 MHz output.
6. Adjust L3502 for zero beat.

TRAP ADJUST —

7. Turn player power off and connect marker generator output to TP 3501 marker generator set at 56.75 MHz (Fig. 5-2).
8. Connect quadrupler detector (Fig. 4-10) to J3502. Connect oscilloscope (or D.C. Voltmeter) to quadrupler detector and set oscilloscope on DC @ 10 mV/Div.

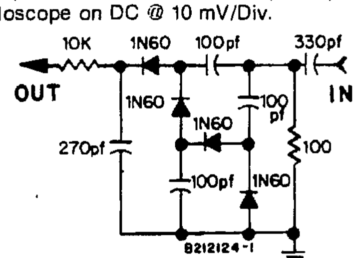


Fig. 4-10. — Quadrupler Detector

9. Adjust L3504 for null (Fig. 4-9).
10. Connect marker generator output to TP 3502, marker generator set at 62.75 MHz.
11. Adjust L3503 for null (minimum deflection).

BANDPASS ADJUST —

12. Connect quadrupler detector and oscilloscope as in step 8.
13. Connect marker generator to junction of R3514 and R3516 (Fig. 5-2).
14. Set marker generator to 65.75 MHz and adjust L3505 for peak output (maximum deflection) (Fig. 4-9).
15. Set marker generator to 61.25 MHz and adjust L3506 for peak output (maximum deflection).
16. Turn player power on and check operation. Repeat steps 13 thru 16 if necessary.

4.5 MHz Osc. Adjust

1. Connect player to TV, player in load mode.
2. Monitor a suitable point in TV IF to pick-up 4.5 MHz sound carrier with a frequency counter.
3. Adjust L3509 (Fig. 4-9) for 4.5 MHz ±1 kHz.

3.58 MHz Reference Oscillator Adjust

1. Connect player to TV, insert Test disc and place player in play mode.
2. Use full field color bar signal and monitor a suitable point in the TV 3.58 MHz oscillator circuit with a frequency counter.
3. Adjust C3406 (Fig. 4-9) for 3.579545 ±10Hz.

Alternate Method —

1. Connect frequency counter via X10 probe to TP 3413 (Fig 5-2).
2. With player in load mode adjust C3406 (Fig. 4-9) for 3.579485 MHz.

(This method allows approximately 60 Hz variance as compensation for loading effect of the frequency counter).

Note: Typical capacity of X10 probe and counter is approximately 20-25pf. A X1 probe (typical capacity of approximately 100pf) may be used with a 33pf capacitor is placed in series with probe. This will place a load on the VCO of approximately 25pf.

Video Modulation Depth Adjust

1. Connect player to TV.
2. Use Test disc 120 IRE White field signal (Segment G).
3. Adjust R3402 (Fig. 4-9) Clockwise till a buzz is heard in TV audio, then turn R3402 counterclockwise to just eliminate the buzz.

Audio Level Adjust

1. Use Test disc signal with 480 Hz, 100% audio modulation (Segment E).
2. Connect oscilloscope to TP 3601 (Fig. 5-2).
3. Adjust R3609 (Fig. 4-9) for 1.2V p-p output.

VCXO Adjustment

3.58 MHz Reference Oscillator Adjustment should be checked, and if necessary performed, prior to making this adjustment.

Step A. Determining VCXO Frequency Limits

1. Connect DVM from TP 3406 to ground (Fig. 5-2).
2. Use Test Disc (Stock No. 149235) signal Segment I.
3. Connect 1.5 megohm resistor from TP 3412 to +15V source.
4. With player in play mode, record voltage measured on DVM as V1. (example V1 = 8.66V)
5. Remove 1.5 megohm resistor end from +15V source and connect it to ground.
6. Record voltage measured on DVM as V2. (example: V2 = 7.09V). Remove grounded end of 1.5 megohm resistor, leave one end connected to TP 3412.
7. Using the formula $\Delta F = 3/2\,(V1-V2-.177)$ kHz, calculate ΔF. (The result should be between 1.90 and 2.52 kHz.)

   EXAMPLE:
   $\Delta F = 3/2\,(8.66V - 7.09V - .177)$ kHz
   $\Delta F = 3/2\,(1.393)$ kHz
   $\Delta F = 1.5 \times 1.393$ kHz
   $\Delta F = 2.09$ kHz

ELECTRICAL ADJUSTMENTS (continued)

Note: The voltages shown in solving the formula to determine ΔF are example voltages - actual measured voltages (V1 & V2) will have to be substituted.

8. Calculate high frequency limit. fH = 1535.625 + ΔF kHz
EXAMPLE: fH = 1535.625 kHz + 2.09 kHz

9. Calculate low frequency limit. fL = 1535.625 - ΔF kHz
EXAMPLE: fL = 1535.625 kHz — 2.09 kHz

Step B. VCXO Adjust

1. Connect frequency counter, via X10 probe (see Note), to TP 3404 (Fig. 5-2).

Note: Typical capacity of X10 probe is approximately 20-25 pf. A X1 probe (typical capacity of approximately 100 pf) may be used with a 33 pf capacitor is placed in Series with probe This will place a load on the VCO of approximately 25 pf.

2. Using Test Disc Segment I signal, place player in Play mode, push "pause button." Frequency counter should indicate a frequency of 1535.625 kHz ±100 Hz. If not adjust L3403 for 1535.625 kHz ±100 Hz.

Caution: 1.5 Meg resistor previously connected to TP 3412 must be open at one end for this check/adjustment.

3. Connect 1.5 meg resistor from TP 3412 to +15V source. With player in "Play" mode Release Pause mode. Frequency indicated on frequency meter should be ±100 Hz of previously calculated fH (example — 1537.715 kHz ±100 Hz). If not - adjust R3412 to achieve the previously calculated fH.

4. Remove 1.5 meg resistor from +15V and recheck Step 2.

5. Connect 1.5 meg resistor from TP 3412 to ground (player in Play mode using Test Disc Segment I signal). Frequency indicated on frequency counter should be ±100 Hz of previously calculated fL (example 1533.445 kHz ±100 Hz). If not, adjust L3402 to remove approximately 1/2 of the frequency error and adjust R3412 to remove the remainder.

6. Repeat Steps 2, 3, and 5 until limits of each are met.

7. Remove 1.5 meg from TP 3412.

Phase Detector Gain Adjust

1. Use Test Disc - any signal, place player in play mode.

2. Connect oscilloscope to TP 3403 (Fig. 5-2).

3. Short TP 3402 to TP 3410 with a clip lead.
Short TP 3406 to TP 3410 with a clip lead.

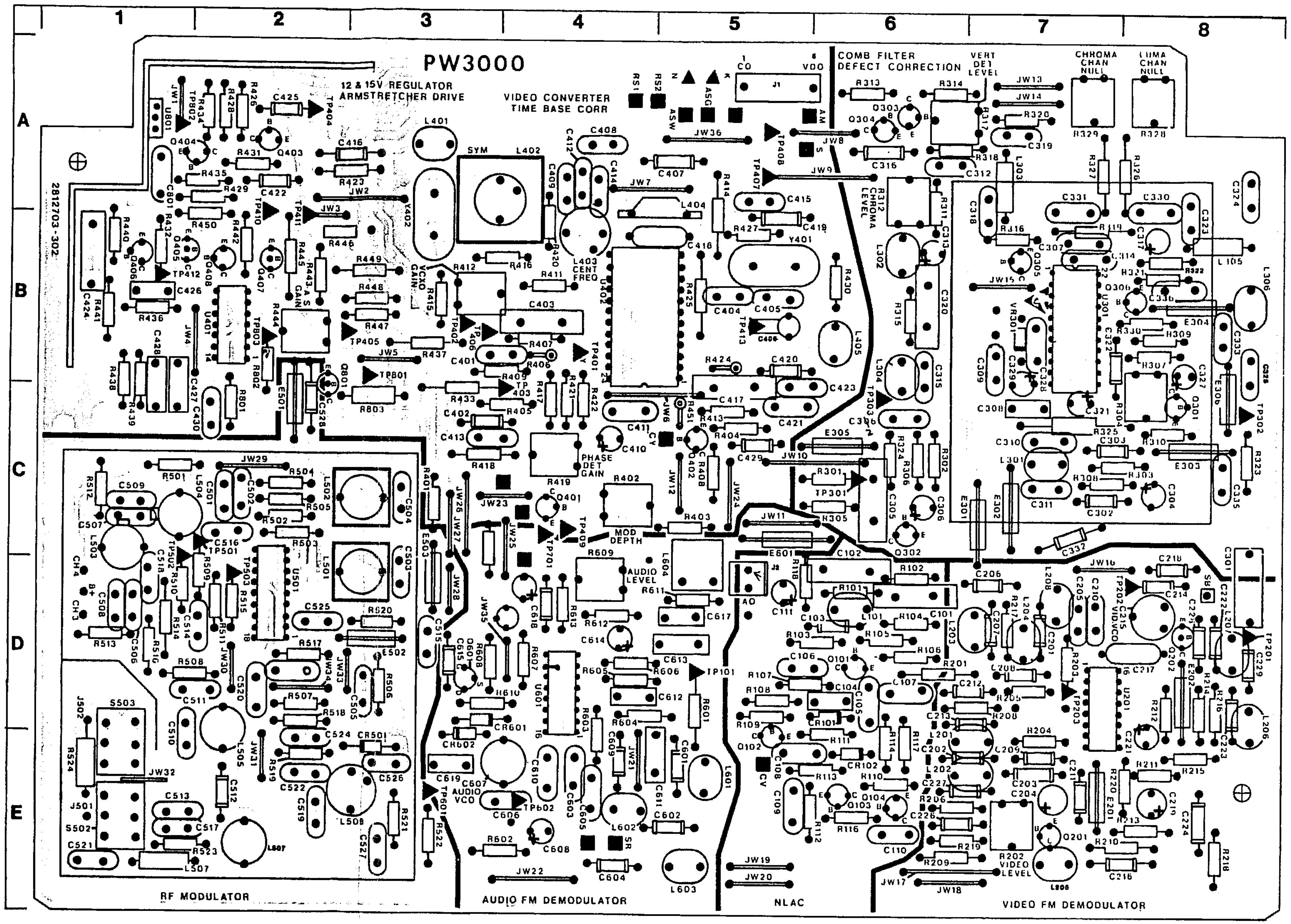
4. Adjust R3419 for 3V p-p indication on oscilloscope.

5. Remove shorting clip leads from TP 3402 and TP 3406 to TP 3410.

PW 3000 — Component Location Guide

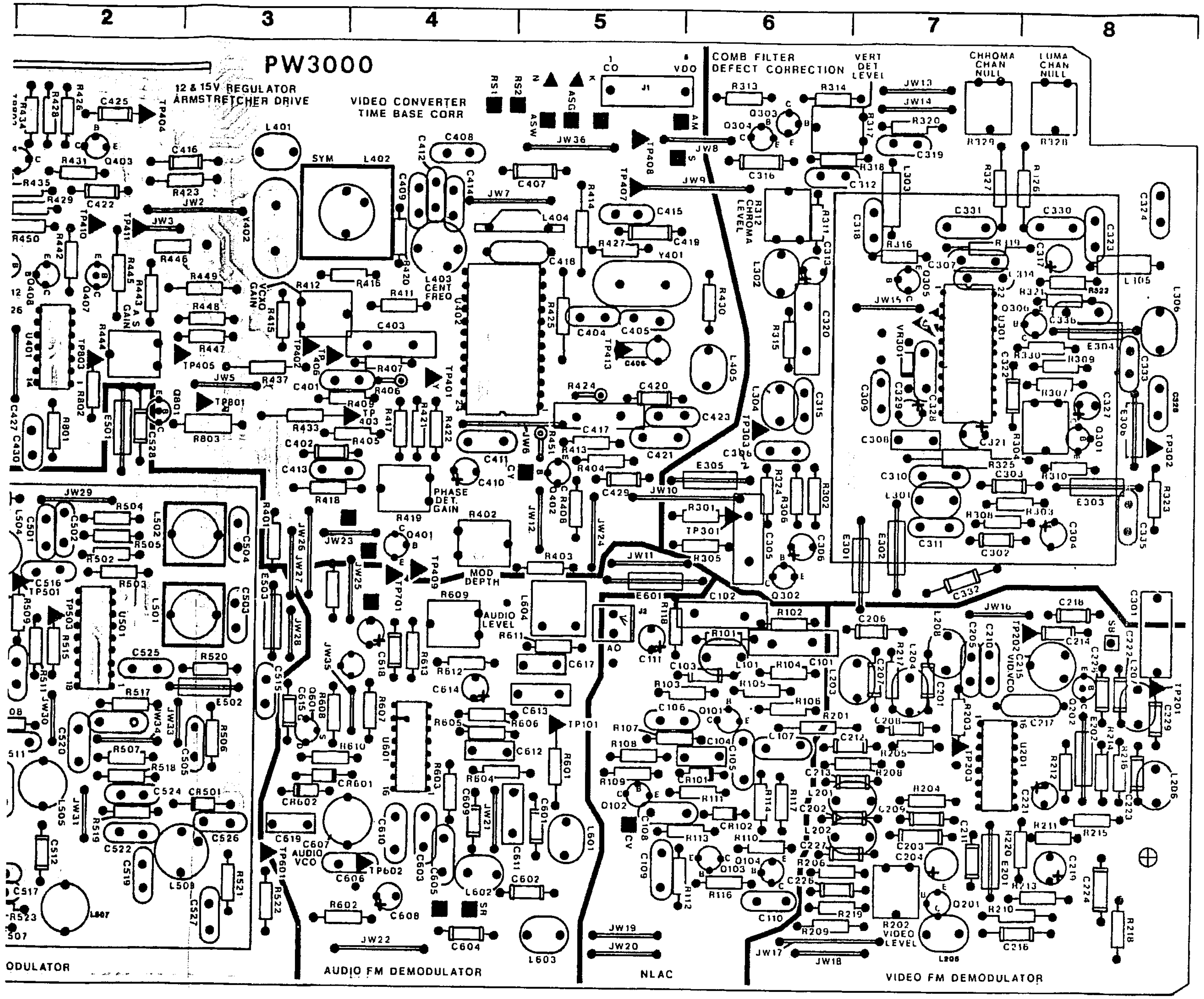
C3101 ...6D	C3333 ...8B	J3001....5A	R3111....6E	R3416 ...4B	R3611 ...5D
C3102 ...6C	C3335 ...8C	J3002....5D	R3112....6E	R3417 ...4C	R3612 ...4D
C3103 ...6D	C3336 ...8B	J3501 ....1E	R3113....6E	R3418 ...3C	R3613 ...4D
C3104 ...6D	C3401 ...3B	J3501....1D	R3114....6E	R3419 ...4C	R3801 ...2C
C3105 ...8D	C3402 ...3C		R3116....6E	R3420 ...4B	R3802 ...2B
C3106 ...5D	C3403 ...4B	L3101....6D	R3117....6E	R3421 ...4C	R3803 ...3C
C3107 ...6D	C3404 ...5B	L3201....7E	R3118 ...5D	R3422 ...4C	R3804....2B
C3108 ...5E	C3405 ...5B	L3202....7E	R3201 ...6D	R3423 ...2A	S3502....1E
C3109 ...5E	C3406 ...5B	L3203....7D	R3202....7E	R3424 ...5B	S3503....1D
C3110 ...6E	C3407 ...5A	L3204....7D	R3203 ...7D	R3425 ...5B	
C3111 ...5D	C3408 ...4A	L3205....7E	R3204....7E	R3426 ...2A	
C3201 ...7D	C3409 ...4A	L3206....8D	R3205 ...7D	R3427 ...5B	U3201 ...7D
C3202 ...7E	C3410 ...4C	L3207....8D	R3206....7E	R3428 ...2A	U3301 ...7B
C3203 ...7E	C3411 ...4C	L3208....7D		R3429 ...2A	U3401 ...2B
C3204 ...7E	C3412 ...4A	L3301....7C	R3208 ...7D	R3430 ...6B	U3402 ...4B
C3205 ...7D	C3413 ...3C	L3302....6B	R3209....6E	R3431 ...2A	U3501 ...2D
C3206 ...7D	C3414 ...4A	L3303....7A	R3210....8E	R3432 ...1B	U3601 ...4D
C3207 ...7D	C3415 ...5A	L3304....6B	R3211....8E	R3433 ...3C	U3801 ...1A
C3208 ...7D	C3416 ...2A	L3305....8B	R3212 ...8D	R3434 ...2A	VR3301 ..7B
C3209 ...7E	C3417 ...5C	L3306....8B	R3213....8E	R3435 ...2A	
C3210 ...7D	C3418 ...5B	L3401....3A	R3214 ...8D	R3436 ...1B	Y3401....5B
C3211 ...7E	C3419 ...5B	L3402....4A	R3215....8E	R3437 ...3B	Y3402....3A
C3212 ...7D	C3420 ...5B	L3403....4B	R3216 ...8D	R3438 ...1B	
C3213 ...7D	C3421 ...5C	L3404....5A	R3217 ...7D	R3439 ...1C	**STAKES**
C3214 ...8D	C3422 ...2A	L3405....6B	R3218....8E	R3440 ...1B	AM......5A
C3215 ...8D	C3423 ...5C	L3501....2D	R3219....7E	R3441 ...1B	AO......5D
C3216 ...8E	C3424 ...1B	L3502....2C	R3220....8E	R3442 ...2B	ASG.....5A
C3217 ...8D	C3425 ...2A	L3503....1C	R3301 ...6C	R3443 ...2B	ASW.....5A
C3218 ...8D	C3426 ...1B	L3504....2C	R3302 ...6C	R3444 ...2B	CH3.....1D
C3219 ...8E	C3427 ...1C	L3505....2E	R3303 ...8C	R3445 ...2B	CH4.....1D
C3221 ...8E	C3428 ...1B	L3506....2E	R3304 ...8C	R3446 ...2B	CO......5A
C3222 ...8D	C3429 ...5C	L3507....1E	R3305 ...6C	R3447 ...3B	CV......5E
C3223 ...8D	C3430 ...2C	L3509....3E	R3306 ...6C	R3448 ...3B	K........5A
C3224 ...8E	C3501 ...2C	L3601....5E	R3307 ...8B	R3449 ...3B	N........5A
C3225.....?	C3502 ...2C	L3602....4E	R3308 ...7C	R3450 ...2B	RS1.....4A
C3226 ...7E	C3503 ...3C	L3603....5E	R3309 ...8B	R3451 ...5C	RS2.....4A
C3227 ...7E	C3504 ...3C	L3604....5D	R3310 ...8C	R3452....4B	S........5A
C3228 ...8D	C3505 ...3D		R3311 ...6A	R35001 ..1C	SB......8D
C3229 ...8D	C3506 ...1D	Q3101 ...6D	R3312 ...6A	R3502 ...2C	SR.......4E
C3301 ...8D	C3507 ...1C	Q3102 ...5E	R3313 ...6A	R3503 ...2C	VDO.....5A
C3302 ...7C	C3508 ...1D	Q3103 ...6E	R3314 ...6A	R3504 ...2C	Y........4B
C3303 ...7C	C3509 ...1C	Q3104 ...6E	R3315 ...6B	R3505 ...2C	
C3304 ...8C	C3510 ...1E	Q3201 ...7E	R3316 ...7B	R3506 ...3D	**TEST**
C3305 ...6C	C3511 ...2D	Q3202 ...8D	R3317 ...6A	R3507 ...2D	**POINTS**
C3306 ...6C	C3512 ...2E	Q3301 ...8B	R3318 ...6A	R3508 ...2D	TP3101 ..5D
C3307 ...7B	C3513 ...1E	Q3302 ...6C	R3319 ...7B	R3509 ...2D	TP3201 ..8D
C3308 ...7C	C3514 ...2D	Q3303 ...6A	R3320 ...7A	R3510 ...1D	TP3203 ..7D
C3309 ...7B	C3515 ...3D	Q3304 ...6A	R3321 ...8A	R3511 ...2D	TP3301 ..6C
C3310 ...7C	C3516 ...2C	Q3305 ...7B	R3322 ...8B	R3512 ...1C	TP3302 ..6C
C3311 ...7C	C3617 ...5D	Q3306 ...8B	R3323 ...8C	R3513 ...1D	TP3303 ..6C
C3312 ...8A	C3618 ...4D	Q3401 ...4C	R3324 ...6C	R3514 ...1D	TP3401 ..4C
C3313 ...6B	C3619 ...3E	Q3402 ...5C	R3325 ...7C	R3515 ...2D	TP3402 ..3B
C3314 ...7B	C3801 ...1A	Q3403 ...2A	R3326 ...8A	R3516 ...1D	TP3403 ..4C
C3315 ...6B		Q3404 ...1A	R3327 ...7A	R3517 ...2D	TP3404 ..2A
C3316 ...6A	CR3101 ..6D	Q3405 ...1B	R3328 ...8A	R3518 ...2D	TP3405 ..3B
C3317 ...8B	CR3102 ..6E	Q3406 ...1B	R3329 ...7A	R3519....2E	TP3406 ..3B
C3318 ...7A	CR3501 ..3E	Q3407 ...2B	R3330 ...8B	R3520 ...3D	TP3407 ..5A
C3319 ...7A	CR3601 ..3D	Q3408 ...2B	R3401 ...3C	R3521....3E	TP3408 ..5A
C3320 ...6B	CR3602 ..3E	Q3601 ...3D	R3402 ...4C	R3522....3E	TP3409 ..4C
C3221 ...7C	E3201....7E	Q3801 ...2B	R3403 ...5C	R3523....1E	TP3410 ..2A
C3322 ...7B	E3202....8D		R3404 ...5C	R3524....1E	TP3411 ..2A
C3323 ...8B	E3301 ...7C	R3101 ...6D	R3405 ...4C	R3601 ...5D	TP3412 ..1B
C3324 ...8A	E3302 ...7C	R3102 ...6D	R3406 ...4B	R3602....4E	TP3413 ..5B
C3325 ...8B	E3303 ...8C	R3103 ...5D	R3407 ...4B	R3603 ...4D	TP3501 ..2C
C3326 ...6C	E3304....8B	R3104 ...6D	R3408 ...5C	R3604 ...4D	TP3502 ..1C
C3327 ...8B	E3305 ...6C	R3105 ...6D	R3409 ...4B	R3605 ...4D	TP3503 ..2D
C3328 ...7B	E3306 ...8C	R3106 ...6D	R3411 ...4B	R3606 ...4D	TP3601 ..3E
C3329 ...7B	E3501....2C	R3107 ...5D	R3412 ...3B	R3607 ...4D	TP3602 ..4E
C3330 ...8A	E3502....3D	R3108 ...5D	R3413 ...5C	R3608 ...3D	TP3701 ..4C
C3331 ...7A	E3502 ...3C	R3109 ...5D	R3414 ...5A	R3609 ...4D	TP3801 ..3B
C3332 ...7B	E3601 ...5C	R3110....6E	R3415 ...3B	R3610 ...3D	TP3802 ..1A

SIGNAL PROCESSING CIRCUIT BOARD



NOTE: Add 3000 Prefix To Item Numbers

Fig. 5-1. — PW 3000 Signal Processing Circuit Board Assembly



NOTE: Add 3000 Prefix To Item Numbers

. — PW 3000 Signal Processing Circuit Board Assembly

INTERCONNECT WIRING

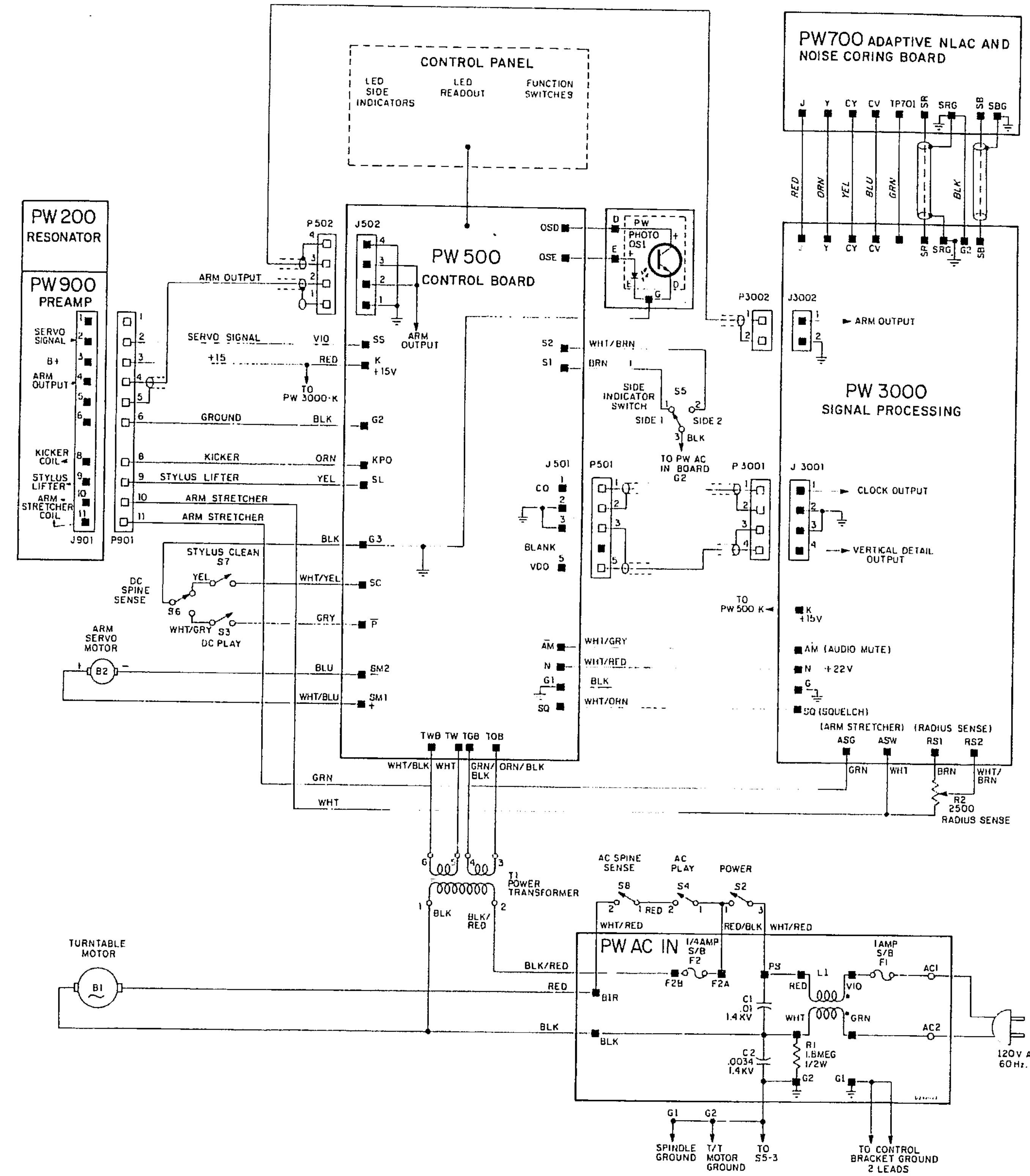
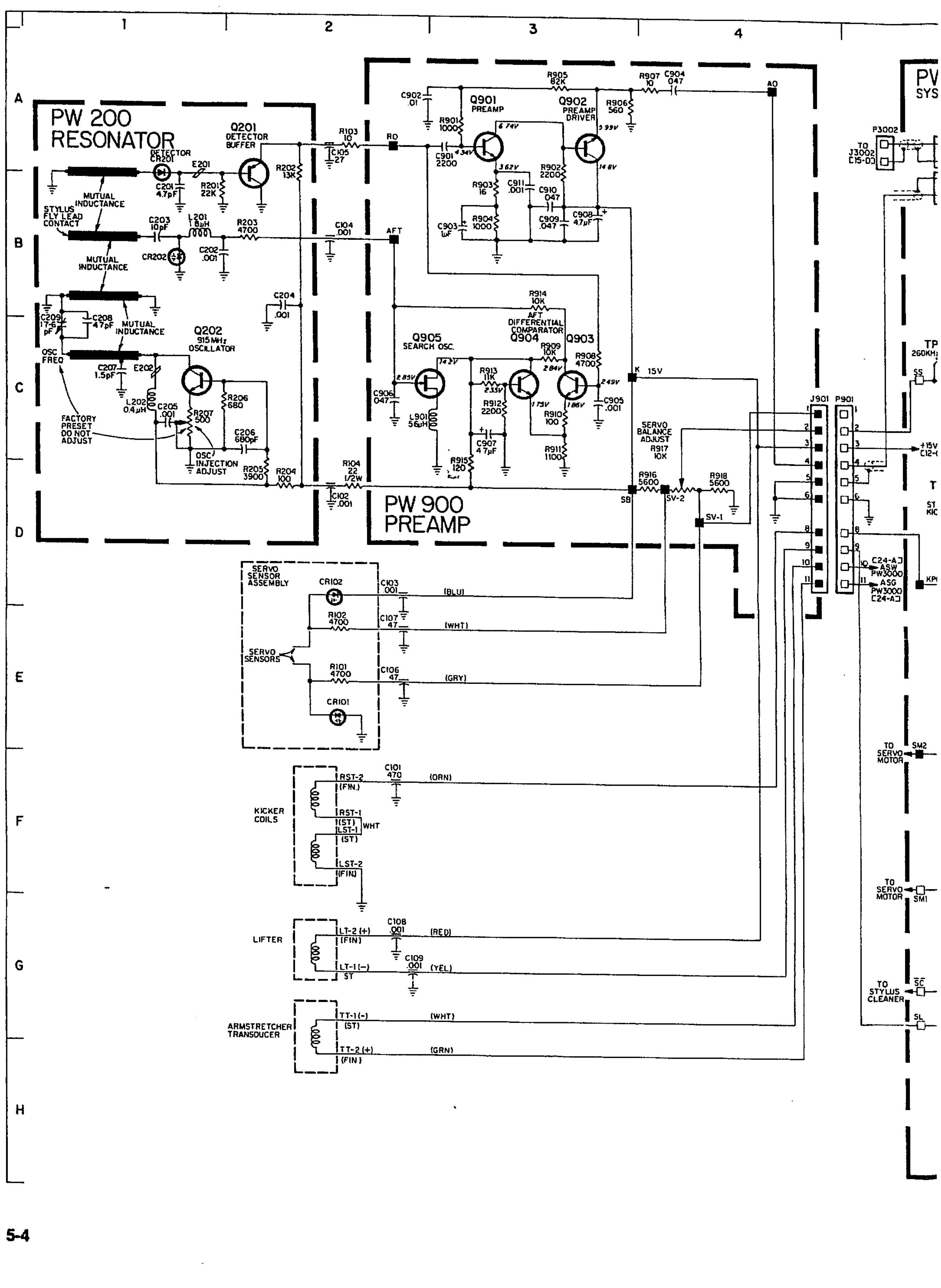
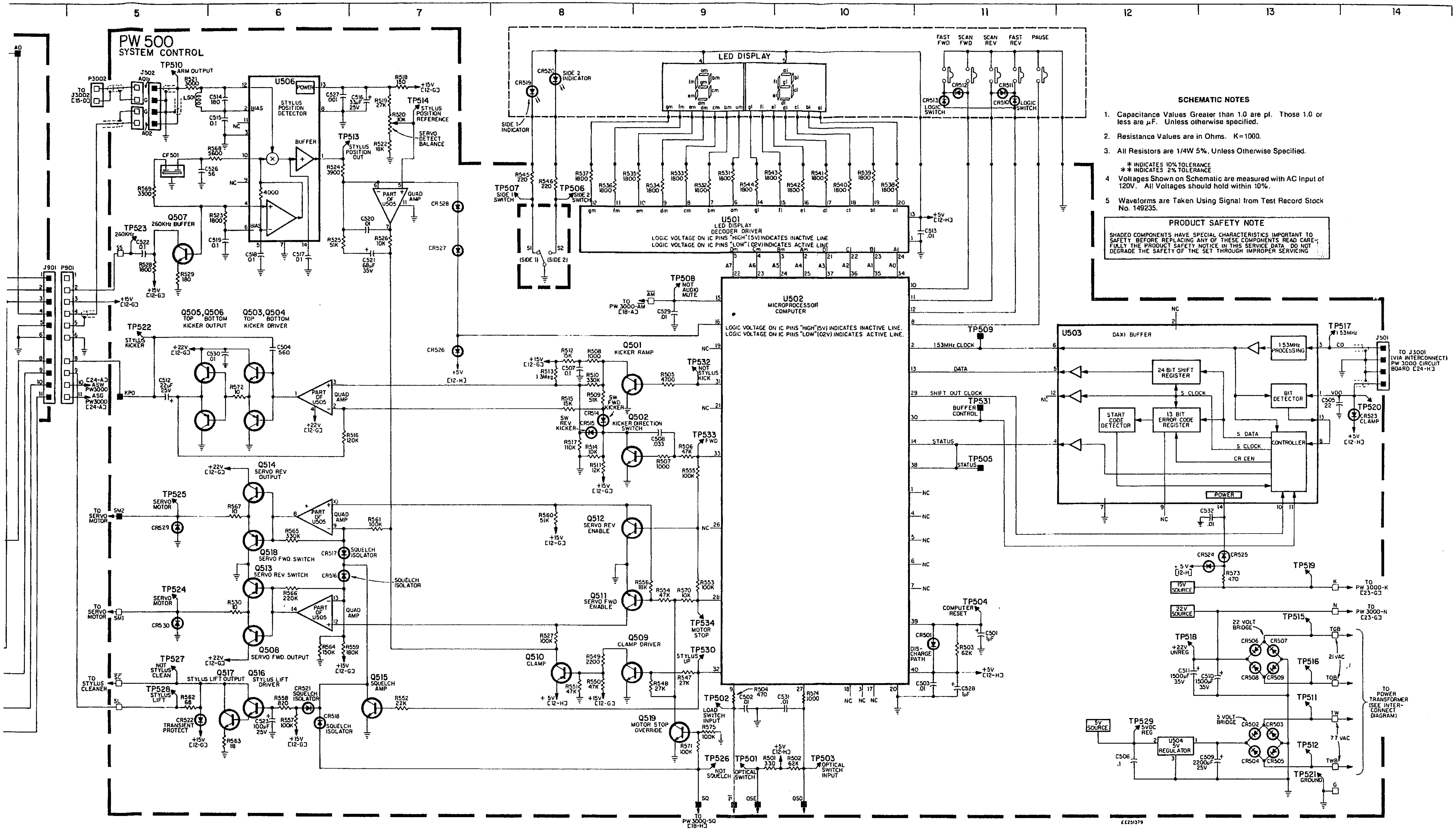


Fig. 5-2. — SFT 100 Interconnect Wiring Diagram


PW 200
RESONATOR
Q201
DETECTOR
BUFFER
DETECTOR CR201
MUTUAL INDUCTANCE
STYLUS FLY LEAD CONTACT
Q202
915 MHz
OSCILLATOR
OSC FREQ
FACTORY PRESET DO NOT ADJUST
OSC INJECTION ADJUST
PW 900
PREAMP
Q901
PREAMP
Q902
PREAMP DRIVER
Q903
Q904
AFT DIFFERENTIAL COMPARATOR
Q905
SEARCH OSC.
SERVO BALANCE ADJUST
R917
10K
J901
P901
SERVO SENSOR ASSEMBLY
SERVO SENSORS
KICKER COILS
LIFTER
ARMSTRETCHER TRANSDUCER
(BLU)
(WHT)
(GRY)
(ORN)
(RED)
(YEL)
(WHT)
(GRN)
TO SERVO MOTOR
TO SERVO MOTOR
TO STYLUS CLEANER
PV
SYS



SCHEMATIC NOTES

1. Capacitance Values Greater than 1.0 are pf. Those 1.0 or less are µF. Unless otherwise specified.
2. Resistance Values are in Ohms. K=1000.
3. All Resistors are 1/4W 5%, Unless Otherwise Specified.
   - * INDICATES 10% TOLERANCE
   - ** INDICATES 2% TOLERANCE
4. Voltages Shown on Schematic are measured with AC Input of 120V. All Voltages should hold within 10%.
5. Waveforms are Taken Using Signal from Test Record Stock No. 149235.

PRODUCT SAFETY NOTE

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING

Fig. 5-3. — Resonator, Preamp, and System Control Schematic Diagram

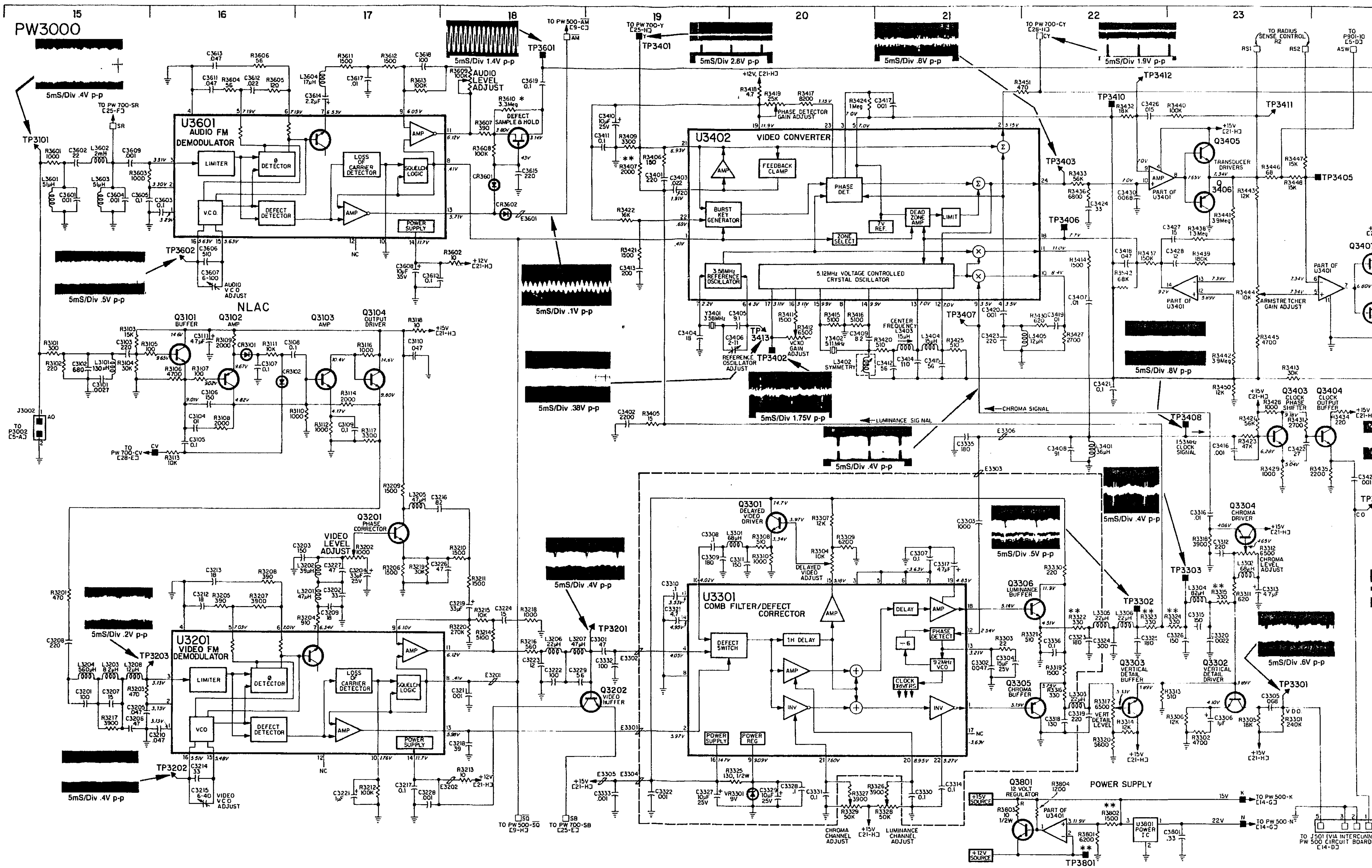


Fig. 5-4. — Signal Processing, NLAC And Noise Coring Schematic Diagram

SIGNAL PROCESSING, NLAC AND NOISE CORING SCHEMATIC

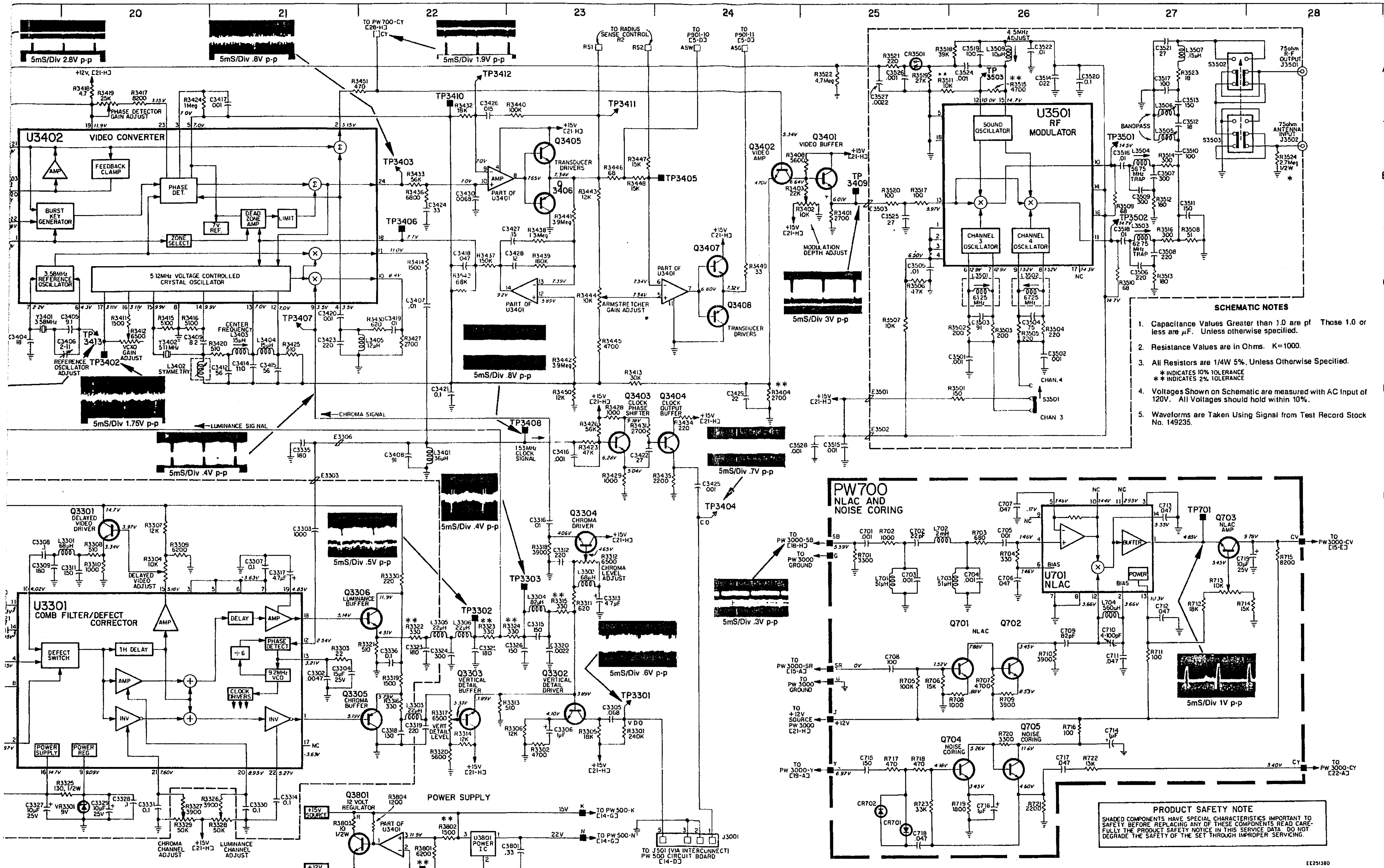
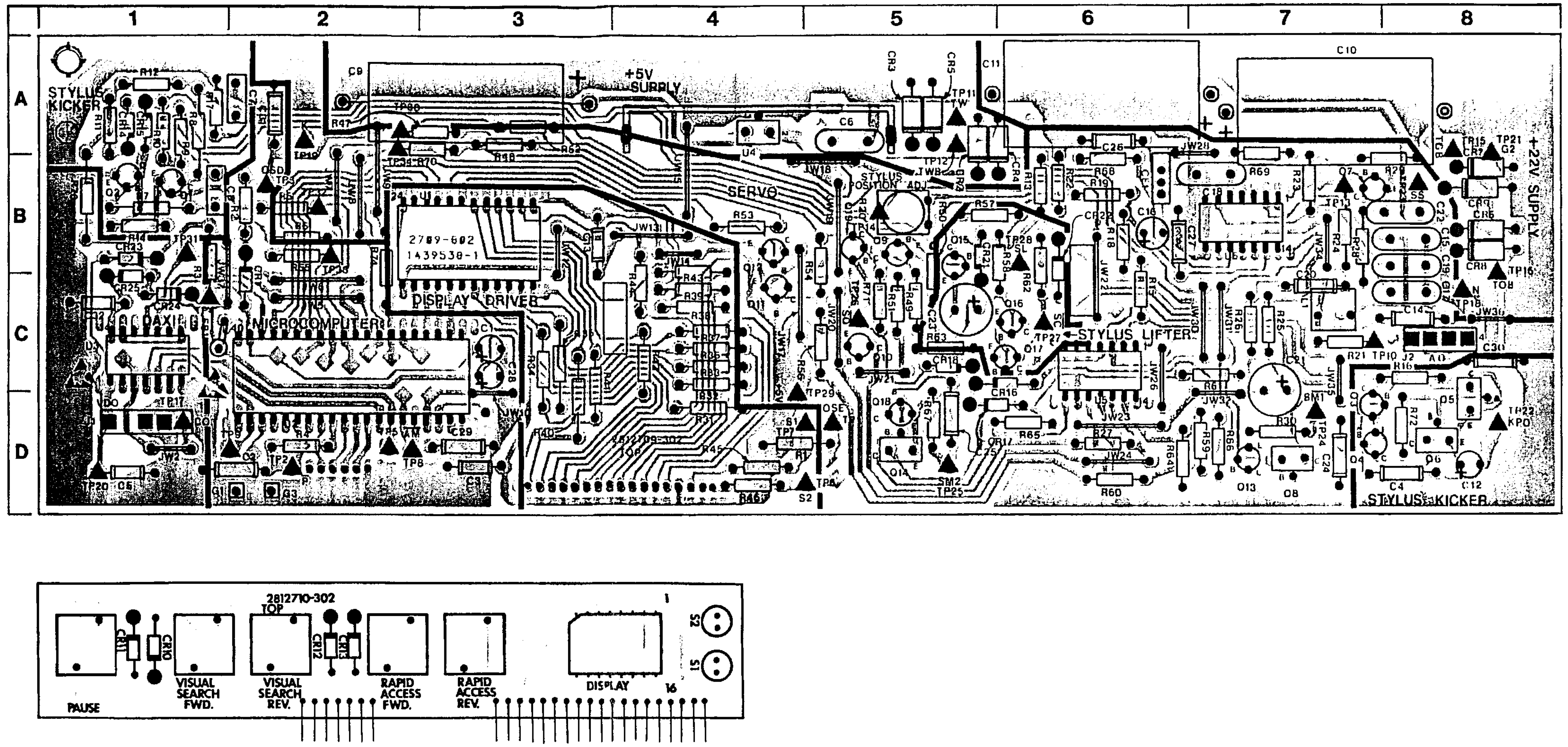


Fig. 5-4. — Signal Processing, NLAC And Noise Coring Schematic Diagram

SYSTEM CONTROL CIRCUIT BOARD

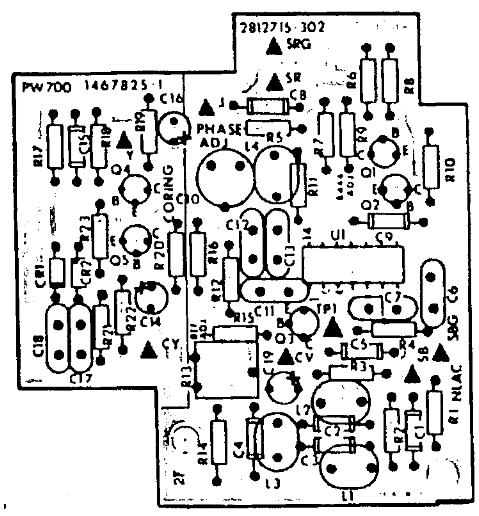
PW 500 — Component Location Guide

C1.......3B	J1.......1B	R33 .....4C	TP6 .....5D
C2 ......2D	J2.......8C	R34 .....3C	TP7 .....4D
C3 ......3D	L1.......7C	R35 .....3C	TP8 .....2D
C4 ......8D		R36 .....4C	TP9 .....1D
C5 ......1D	Q1 ......1B	R37 .....4C	TP10 ....7C
C6.......5A	Q2 ......1B	R38 .....4C	TP11 ....5A
C7.......2A	Q3 ......7D	R39 .....4C	TP12 ....5A
C8.......1B	Q4 ......7D	R40......3D	TP13 ....7B
C9.......2A	Q5 ......8D	R41 .....3C	TP14 ....5B
C10 .....7A	Q6 ......8D	R42 .....4C	TP15 ....8B
C11 .....6A	Q7 ......7B	R43 .....4C	TP16 ....8B
C12 .....6D	Q8 ......7D	R44 .....4C	TP17 ....1D
C13 .....3B	Q9 ......5B	R45......4D	TP18 ....8C
C14 .....8C	Q10 .....5C	R46......4D	TP19 ....2A
C15 .....8B	Q11 .....4C	R47......2A	TP20 ....1D
C16 .....6B	Q12 .....4B	R48......3A	TP21 ....8B
C17 .....8C	Q13 .....7D	R49 .....5C	TP22 ....8D
C18 .....7B	Q14 .....5D	R50......5B	TP23 ....8B
C19 .....8B	Q15 .....5B	R51 .....5C	TP24 ....7D
C20 .....7C	Q16 .....6C	R52......3A	TP25 ....5D
C21 .....7C	Q17 .....6C	R53......4B	TP26 ....5C
C22 .....8B	Q18 .....5D	R54......5B	TP27 ....6C
C23 .....5C	Q19 .....5B	R55......2B	TP28 ....6B
C24 .....7D		R56 .....5C	TP29 ....4D
C25 .....5D	R1.......4D	R57......5B	TP30 ....2A
C26 .....6A	R2.......2B	R58......6B	TP31 ....1B
C27 .....6B	R3.......1B	R59......7D	TP32 ....2B
C28 .....3B	R4.......2D	R60......6D	TP33 ....2B
C29 .....3D	R5.......2B	R61 .....7C	TP34 ....2A
C30 .....8C	R6.......2B	R62 .....6C	
C31 .....2A	R7.......1B	R63 .....5C	**STAKES**
C32 .....1C	R8.......1A	R64......8D	AM......2D
	R9.......1A	R65......6D	AO......8C
CF1 .....6B	R10......1A	R66......7D	CO......1D
	R11......1A	R67......5D	G1 ......1D
CR1.....2C	R12......1A	R68......6B	G2 ......8B
CR2.....5B	R13......6B	R69......7B	G3 ......2D
CR3.....5A	R14......1B	R70......3A	K........2A
CR4.....6B	R15 .....1C	R71 .....5C	KPO.....8D
CR5.....5A	R16 .....8C	R72 .....8C	N........8C
CR6.....8B	R17......1A	R73......1B	OSD.....2C
CR7.....8B	R18......6B	R74......2B	OSE.....5D
CR8.....8B	R19......6B	U1.......3B	$\overline{P}$........2D
CR9.....8B	R20......5B	U2.......2D	S1.......4D
CR14....1A	R21 .....7C	U3 ......1C	S2.......4D
CR15....1A	R22......6B	U4.......4A	$\overline{SC}$......6C
CR16....8C	R23......7B	U5 ......6C	SL.......6B
CR17....5D	R24......7B	U6.......7B	SM1.....7D
CR18....5C	R25 .....7C		SM2.....5D
CR21....5B	R26 .....7C	**Test**	$\overline{SQ}$......5C
CR22....6B	R27......6D	**Points**	SS.......8B
CR23....1B	R28......7B	TP1 .....5C	TGB.....8B
CR24....1C	R29......8B	TP2 .....2D	TOB.....8B
CR25....1C	R30......7D	TP3......2B	TW......5A
	R31......4D	TP4 .....1C	TWB.....5B
FB1 .....1C	R32 .....4C	TP5 .....2D	VDO.....1D



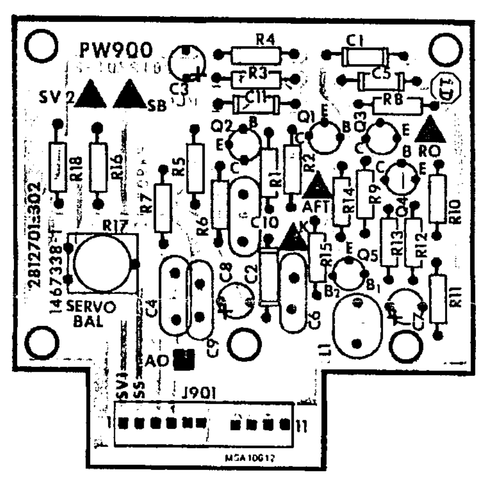
NOTE: Add 500 Series Prefix To Item Numbers

Fig. 5-5. — PW 500 System Control Circuit Board Assembly



NOTE: Add 700 Series Prefix To Item Numbers

Fig. 5-6. — PW 700 NLAC And Noise Coring Circuit Board Assembly



NOTE: Add 900 Series Prefix To Item Numbers

Fig. 5-7. — PW 900 Preamp Circuit Board Assembly

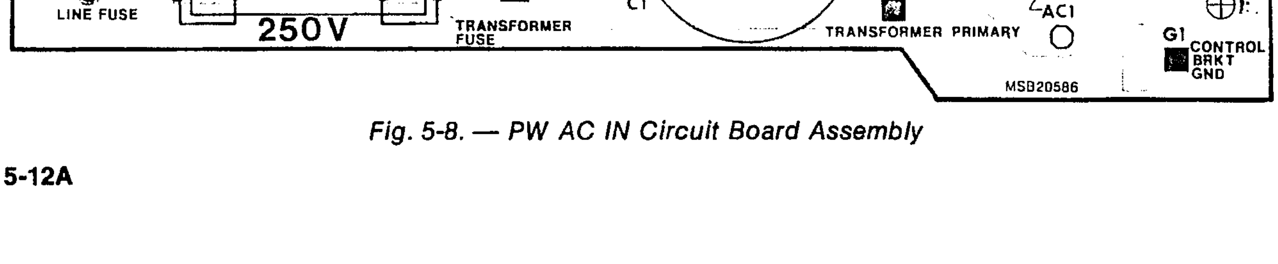


Fig. 5-8. — PW AC IN Circuit Board Assembly

INTERCONNECT WIRING

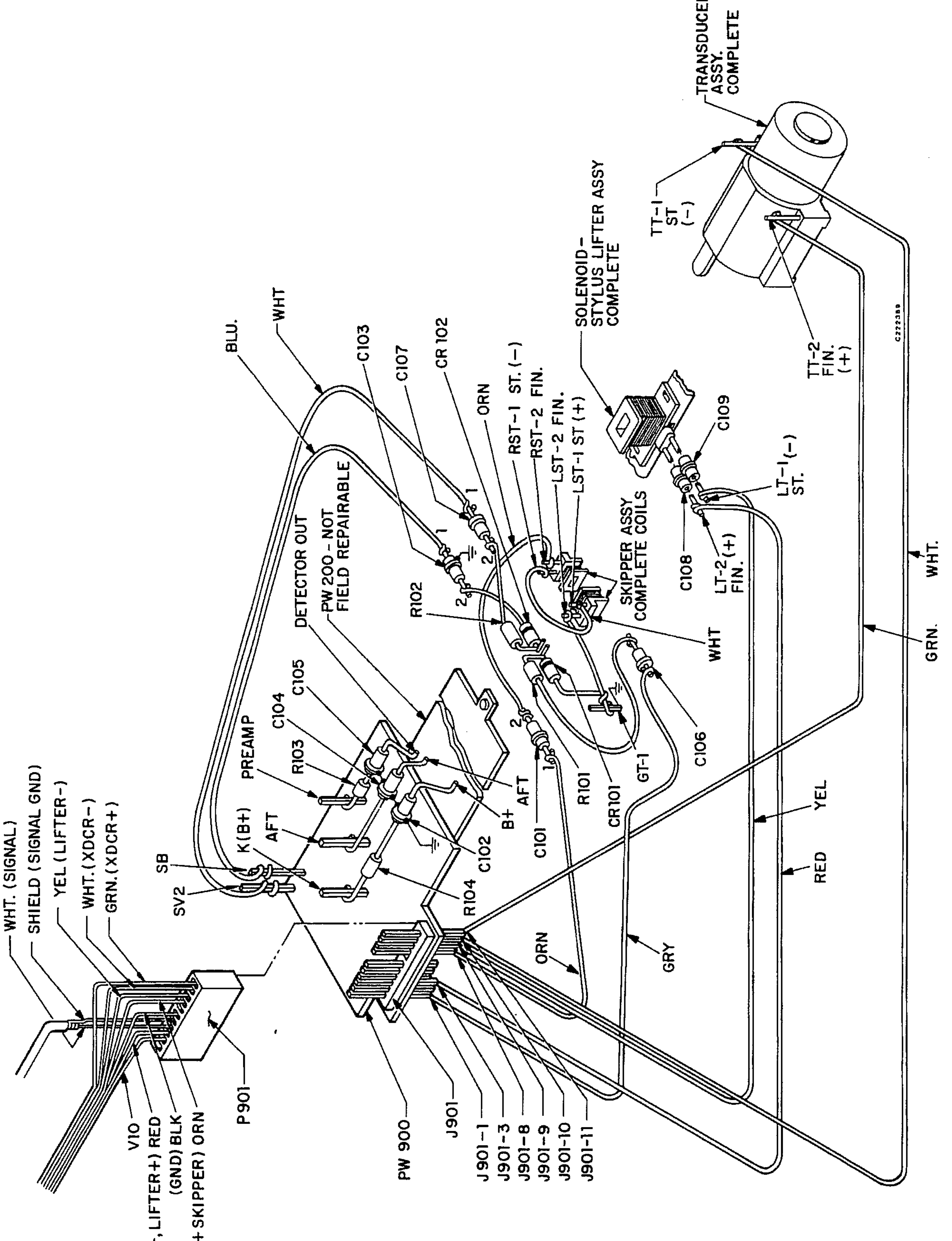


Fig. 5-9. — Pick-up Arm Assembly Interconnect Wiring

SAFETY RELATED COPPER PATTERN

Modern circuit design/manufacturing techniques dictate a rather high component density on the printed circuit board utilized in this instrument. It naturally follows that the area available for "printing" copper patterns is also restricted. To maintain high reliability and safety standards, the printed circuit boards are manufactured under carefully controlled conditions and to extremely close tolerances. Some areas of the board are more critical than others due to spacing, pattern size, voltage/current requirements, etc. RCA has concluded, as a result of extensive studies that less-than-optimum repair of copper patterns in these specific areas can degrade the reliability/safety of the instrument. The critical copper patterns are shown as "dark black" in the illustration (Fig. 5-10). In the event printed circuit damage is evident in these designated areas (copper pattern broken, lifted, etc.) special soldering techniques are necessary to maintain reliability and safety standards. Contact your local RCA Consumer Electronics Distributor Service Manager before attemtping copper pattern repair in the designated areas on the board layout.

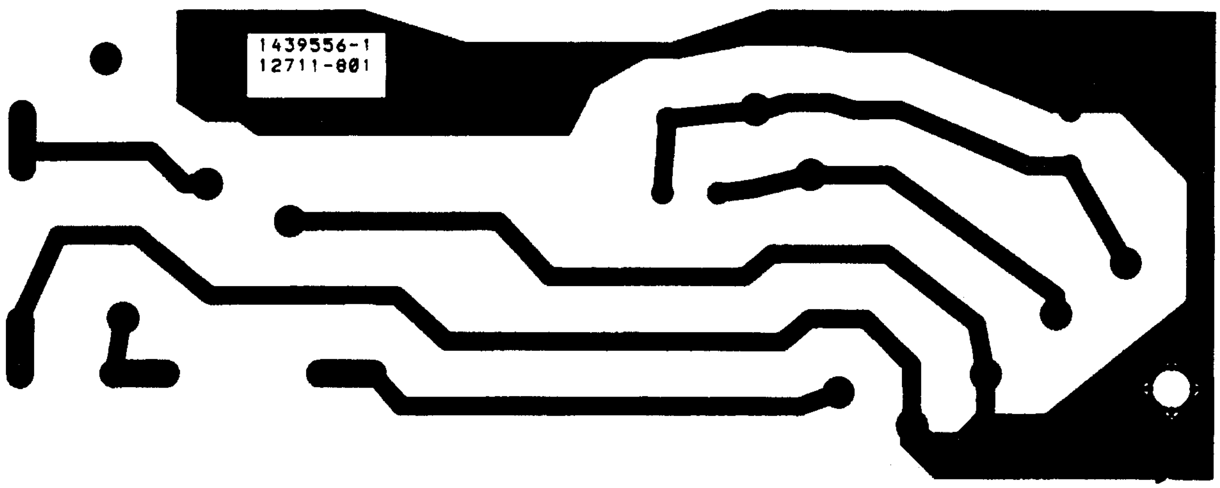


Fig. 5-10. PW AC IN Circuit Board — Critical Copper Pattern

REPLACEMENT PARTS

WARRANTY STATUS OF ASSEMBLIES AND PARTS

- ● Complete assembly not eligible for warranty exchange or replacement.
- † Eligible for warranty exchange for new or rebuilt unit.
- ‡ Complete assembly eligible for warranty replacement with new or rebuilt unit.

All other parts, except cabinet parts, are eligible for warranty replacement as discrete components. Cabinet parts must have prior approval of RCA for warranty replacement.

Warranty status of assemblies and parts is subject to change without notice.

PRODUCT SAFETY NOTE—Components marked with a (*) have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2 of this Service Data. Do not degrade the safety of the set through improper servicing. Although assemblies as a whole may not be marked with a (*), replacement of RCA assemblies with other assemblies not RCA approved may result in a safety hazard.

VIDEODISC PLAYER

MODEL SFT 100

CIRCUIT BOARDS

PW200 — RESONATOR

Not Field Repairable If Defective Replace Arm Assembly 149002

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
			PW500—SYSTEM CONTROL
PW500	149122	2812541-501	• Circuit — system control complete
			CAPACITORS
C501	149200	2841273-161	1 uf 50V electrolytic
C502	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C503	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C504	143878	2840393-62m	560 pf 10% 50V Z5P tubular
C505	149153	2840391-73a	22 pf 5% 50V NPO tubular
C506	112969	1490939-703	.1 uf 20% 50V Y5T disc
C507	139444	993286-75	.1 uf 10% 100V film
C508	134144	993286-69	.033 uf 10% 100V film
C509	149152	1490303-341	2200 uf 25V electrolytic
C510	149172	1490303-251	1500 uf 35V electrolytic
C511	149172	1490303-251	1500 uf 35V electrolytic
C512	149205	2841274-353	22 uf 35V electrolytic
C513	143882	2840395-30n	.01 uf 50V Z5R tubular
C514	148104	2840392-93j	180 pf 5% 50V tubular
C515	112969	1490939-703	.1 uf 20% 50V Y5T disc
C516	149204	2841274-442	33 uf 25V electrolytic
C517	112969	1490939-703	.1 uf 20% 50V Y5T disc
C518	112969	1490939-703	.1 uf 20% 50V Y5T disc
C519	112969	1490939-703	.1 uf 20% 50V Y5T disc
C520	143882	2840395-30n	.01 uf 50V Z5R tubular
C521	149202	2841274-651	68 uf 35V electrolytic
C522	112969	1490939-703	.1 uf 20% 50V Y5T disc
C523	149203	2841275-143	100 uf 25V electrolytic
C526	145316	2840392-33a	56 pf 5% NPO tubular
C527	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C528	149200	2841273-161	1 uf 50V electrolytic
C529	143882	2840395-30n	.01 uf 50V Z5R tubular
C530	143882	2840395-30n	.01 uf 50V Z5R tubular
C531	143882	2840395-30n	.01 uf 50V Z5R tubular
C532	143882	2840395-30n	.01 uf 50V Z5R tubular
C533	145316	2840392-33A	56 pf 5% 50V NPO tubular
CF501	149194	2871038-1	Filter — ceramic
			DIODES
CR501	119597	1471872-6	Discharge path
CR502	147015	99203-206	5V DC bridge rectifier
CR503	147015	99203-206	5V DC bridge rectifier
CR504	147015	99203-206	5V DC bridge rectifier
CR505	147015	99203-206	5V DC bridge rectifier
CR506	147015	99203-206	22V DC bridge rectifier
CR507	147015	99203-206	22V DC bridge rectifier
CR508	147015	99203-206	22V DC bridge rectifier
CR509	147015	99203-206	22V DC bridge rectifier
CR510	119597	1471872-10	Logic switch
CR511	119597	1471872-10	Logic switch
CR512	119597	1471872-10	Logic switch
CR513	119597	1471872-10	Logic switch
CR514	119597	1471872-6	Forward kicker switch
CR515	119597	1471872-6	Reverse kicker switch
CR516	119597	1471872-6	Squelch isolator
CR517	119597	1471872-6	Squelch isolator
CR518	119597	1471872-6	squelch isolator
CR519	149014	1466679-7	LED side 1 indicator
CR520	149014	1466679-7	LED side 2 indicator
CR521	119597	1471872-6	Squelch isolator
CR522	119597	1471872-6	Transient protector
CR523	119597	1471872-6	Clamp
CR524	119597	1471872-6	Current limiting
CR525	119597	1471872-6	Current limiting
CR526	119597	1471872-6	Silicon
CR527	119597	1471872-6	Silicon
CR528	119597	1471872-6	Silicon
CR529	119597	1471872-6	Silicon
CR530	119597	1471872-6	Silicon
L501	149169	973966-81	Coil — 2 mh

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
			TRANSISTORS
Q501	143794	1417306-12	Kicker ramp switch
Q502	143794	1417306-12	Kicker direction switch
Q503	143794	1417306-12	Kicker top driver
Q504	145776	1417303-3	Kicker bottom driver
Q505	140129	1417327-1	Kicker top output
Q506	140130	1417328-2	Kicker bottom output
Q507	143794	1417306-12	260 kHz buffer
Q508	140129	1417327-3	Servo forward output
Q509	143794	1417306-12	Clamp driver
Q510	145776	1417303-3	Clamp
Q511	143794	1417306-12	Servo forward enable
Q512	143794	1417306-12	Servo reverse enable
Q513	145776	1417303-3	Servo reverse switch
Q514	140129	1417327-3	Servo reverse output
Q515	143794	1417306-12	Squelch amplifier
Q516	143794	1417306-12	Stylus lift driver
Q517	145395	1417318-7	Stylue lift output
Q518	145776	1417303-3	Servo forward switch
Q519	143794	1417306-12	Motor stop overide
			RESISTORS
			CAUTION: Before replacing resistors not listed here see Item 3 of Related Schematic Notes for tolerance rating.
R518	829115	993113-205	*
R520	146263	1479265-14	Control servo detector
R530	829010	993113-177	*
R562	829068	993113-197	*
R563	829018	993113-183	*
R567	829010	993113-177	*
R572	829010	993113-177	*
			INTEGRATED CIRCUITS
U501	143766	1421719-1	Decoder LED driver
U502	149015	1421729-7	Microprocessor (computer)
U503	149016	1421751-1	DAXI buffer
U504	149017	1421753-1	5V DC regulator
U505	149018	1421754-1	Quad amp servo/stylus kicker
U506	149019	1465648-1	Stylus position detector
	149020	2840935-1	LED — display
	149149	2871086-1	Switch — push button customer control
			PW700 — NLAC AND NOISE CORING
PW700	149232	2812538-506	• Circuit — adaptive NLAC & noise coring complete
			CAPACITORS
C701	148057	2840393-92m	1000 pf 10% 50V Z5P disc
C702	149153	2840391-73a	22 pf 50V NPO disc
C703	148057	2840393-92m	1000 pf 10% 50V Z5P disc
C704	148057	2840393-92m	1000 pf 10% 50V Z5P disc
C705	148057	2840393-92m	1000 pf 10% 50V Z5P disc
C706	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C707	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C708	143871	2840392-63j	100 pf 5% 50V SL tubular
C709	143869	2840392-53j	82 pf 5% 50V SL tubular
C710	149160	2871417-2	100 pf 250V trimmer
C711	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C712	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C713	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C714	141868	2841273-162	1 uf 50V electrolytic
C715	148523	2840392-83j	150 pf 5% 50V SL tubular
C716	141868	2841273-163	1 uf 50V electrolytic
C717	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C718	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C719	146256	2841274-143	10 uf 20% 25V electrolytic
CR701	119597	1471872-10	Diode — reference level
CR702	119597	1471872-10	Diode — reference level
U701	149019	1465648-1	IC — synchronious detector
			TRANSISTORS
Q701	143794	1417306-12	716 kHz amp
Q702	149040	1417387-1	Inverter
Q703	143794	1417306-12	NLAC control amp
Q704	141370	1417360-1	Coring amp
Q705	143794	1417306-12	Coring driver
L701	149165	973966-76	Coil — 51 uh
L702	149169	973966-81	Coil — 2 mh
L703	149165	973966-76	Coil — 51 uh
L704	149171	973966-83	Coil — 560 uh

REPLACEMENT PARTS

(continued)

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SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
R711	829110	993113-201	* Resistor
R713	146263	1479265-14	Resistor — control voltage adjust
R716	829110	993113-201	* Resistor
			PW900 PREAMP
PW900	149132	2812530-501	• Circuit — preamplifier complete
			CAPACITORS
C901	149155	2840394-41n	2200 pf 20% 50V Z5R tubular
C902	147036	2840395-31n	.01 uf 20% 50V Z5R tubular
C903	141868	2841273-162	1 uf 50V electrolytic
C904	145896	1490939-503	.047 uf 20% 50V Z5V disc
C905	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C906	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C907	146365	2841273-552	4.7 uf 35V electrolytic
C908	146365	2841273-552	4.7 uf 35V electrolytic
C909	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C910	145896	1490939-503	.047 uf 20% 50V Z5V disc
C911	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
J901	149209	2871090-1	Connector — wafer
L901	149166	973966-77	Coil — 56 uh
			TRANSISTORS
Q901	141370	1417360-1	Preamp
Q902	141370	1417360-1	Preamp driver
Q903	143794	1417306-12	AFT differential comparator
Q904	143794	1417306-12	AFT differential comparator
Q905	149007	1417389-1	Search oscillator
			RESISTORS
			CAUTION: Before replacing resistors not listed here see Item 3 of Related Schematic Notes for tolerance rating.
R909	249555	993218-721	10k ohm 2% 1/4W film
R910	249553	993218-673	100 ohm 2% 1/4W film
R912	426635	993218-705	2200 ohm 2% 1/4W film
R913	436712	993218-722	11k ohm 2% 1/4W film
R915	829110	993113-203	*
R917	146263	1479265-14	Control servo balance
			PW 3000 — SIGNAL PROCESSING
PW3000	149133	2812538-501	• Circuit — signal processing complete
			CAPACITORS
C3101	149245	472442-106	2700 uf 5% 200V tubular
C3102	146186	2840393-72m	680 pf 10% 50V tubular
C3103	146184	2840393-12m	220 pf 10% 50V Z5P tubular
C3104	106736	993286-63	.01 uf 10% 100V film
C3105	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3106	143874	2841252-82j	150 pf 10% 50V SL disc
C3107	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3108	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3109	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3110	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C3111	146365	2840361-552	4.7 uf 35V electrolytic
C3201	143871	2840392-63j	100 pf 5% 50V SL tubular
C3202	146833	2840391-93a	33 pf 5% 50V NPO tubular
C3203	148523	2840392-83j	150 pf 5% 50V SL tubular
C3204	149204	2841362-442	33 uf 25V electrolytic
C3205	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C3206	143867	2840392-23a	47 pf 5% 50V NPO tubular
C3207	149148	2840391-53a	15 pf 5% 50V NPO tubular
C3208	146184	2840393-12m	220 pf 10% 50V Z5P tubular
C3209	146249	2840391-63a	18 pf 5% 50V NPO tubular
C3210	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C3211	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3212	146249	2840391-63a	18 pf 5% 50V NPO tubular
C3213	146249	2840391-63a	18 pf 5% 50V NPO tubular
C3214	146833	2840391-93h	33 pf 5% 50V N750 tubular
C3215	149196	2871417-1	4 pf 500V N750 trimmer
C3216	143869	2840392-53j	82 pf 5% 50V SL tubular
C3217	112969	1490941-703	.1 uf 20% 50V Y5T disc
C3218	149151	2840392-13a	39 pf 5% 50V NPO tubular
C3219	149204	2841274-442	33 uf 25V electrolytic
C3221	141868	2841273-162	1 uf 50V electrolytic
C3222	143871	2840392-63j	100 pf 5% 50V SL tubular
C3223	145676	2840391-43a	12 pf 5% 50V NPO tubular
C3224	149148	2840391-53a	15 pf 5% 50V NPO tubular
C3226	119406	2840390-82a	4.7 pf 10% 50V NPO tubular
C3227	143867	2840392-23j	47 pf 5% 50V SL tubular
C3228	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3229	146366	2840390-92a	5.6 pf 10% 50V NPO tubular
C3301	139302	993286-83	.47 uf 10% 100V film
C3302	149154	2840394-81n	4700 pf 20% 50V Z5R tubular
C3303	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3304	149161	2841274-243	15 uf 25V electrolytic
C3305	126822	1472442-23	.068 uf 20% 100V film
C3306	141868	2841273-163	1 uf 50V electrolytic
C3307	112969	1490939-703	.1 uf 20% 50V Y5T disc

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C3308	139444	993286-75	.1 uf 10% 100V film
C3309	146418	1491412-93a	180 pf 5% 50V NPO disc
C3310	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3311	143874	1491412-83a	150 pf 5% 50V NPO disc
C3312	135452	2841253-13h	220 pf 5% 50V N750 disc
C3313	146210	2840361-553	4.7 uf 20% 35V electrolytic
C3314	112969	1490939-703	.1 uf 20% 50V Z5T disc
C3315	143874	2841252-83h	150 pf 5% 50V N750 disc
C3316	147036	2840395-31n	.01 uf 20% 50V Z5R tubular
C3317	146210	2841273-553	4.7 uf 20% 35V electrolytic
C3318	147635	2841262-5	130 pf 5% 50V NPO disc
C3319	135452	2841253-13h	220 pf 5% 50V N750 disc
C3320	139040	1472442-105	2200 pf 5% 200V film
C3321	146210	2841271-553	4.7 uf 20% 35V electrolytic
C3322	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3323	146418	2841252-93a	180 pf 5% 50V NPO disc
C3324	149147	2841262-6	300 pf 5% 50V N750 disc
C3325	146418	2841252-93a	180 pf 5% 50V NPO disc
C3326	143874	2841252-83a	150 pf 5% 50V NPO disc
C3327	146256	2841274-143	10 uf 20% 25V electrolytic
C3328	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3329	146256	2841274-143	10 uf 20% 25V electrolytic
C3330	112969	1490939-703	.1 uf 20% 50V Z5T disc
C3331	112969	1490939-703	.1 uf 20% 50V Z5T disc
C3332	143871	2840392-63j	100 pf 5% 50V SL tubular
C3333	143879	2841253-90m	1000 pf 20% 50V Z5P disc
C3335	146418	2841252-93a	180 pf 5% 50V NPO disc
C3336	112969	1490939-703	.1 uf 20% 50V Z5T disc
C3401	149233	2841253-13a	220 pf 5% 50V NPO disc
C3402	149155	2840394-41n	2200 pf 20% 50V Z5R tubular
C3403	135048	1472442-17	.022 uf 20% 200V film
C3404	146249	2841251-63a	18 pf 5% 50V NPO disc
C3405	149157	2841262-2	9.1 pf ±.5 pf 50V NPO disc
C3406	132174	1474578-7	11 pf 500V trim
C3407	147036	2840395-31n	.01 uf 20% 50V Z5R tubular
C3408	146254	2841262-4	91 pf 5% 50V NPO disc
C3409	149145	2841251-27a	8.2 pf ±.5 pf 50V NPO disc
C3410	146211	2841274-141	10 uf 25V electrolytic
C3411	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3412	145316	2841252-33a	56 pf 5% 50V NPO disc
C3413	149146	2841262-8	200 pf 5% 250V NPO disc
C3414	143873	2841252-73d	120 pf 5% 50V N150 disc
C3415	145316	2841252-33a	56 pf 5% 50V NPO disc
C3416	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3417	148502	1472442-51	1000 pf 10% 200V film
C3418	145896	1491415-50r	.047 uf 20% 50V Z5V disc
C3419	147036	2840395-31n	.01 uf 20% 50V Z5R tubular
C3420	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3421	112969	1490939-703	.1 uf 5% 50V Y5T disc
C3422	143866	2840391-83a	27 pf 5% 50V NPO tubular
C3423	135452	2841253-13h	220 pf 5% 50V N750 disc
C3424	149190	993286-161	.33 uf 5% 100V film
C3425	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3426	149188	993286-129	.015 uf 5% 100V film
C3427	149189	993286-153	.15 uf 5% 100V film
C3428	149191	993286-151	.12 uf 5% 100V film
C3429	149153	2840391-73a	22 pf 5% 50V NPO tubular
C3430	142751	2841255-12m	.0068 uf 10% 50V Z5P disc
C3431	147036	2840395-31n	.01 uf 20% 50V Z5R tubular
C3501	143879	2841253-90m	1000 pf 20% 50V Z5P disc
C3502	143879	2841253-90m	1000 pf 20% 50V Z5P disc
C3503	146254	2841262-4	91 pf 5% 50V NPO disc
C3504	149150	2841262-9	75 pf 10% 50V NPO disc
C3505	147971	2841255-31m	.01 uf 20% 50V Z5P disc
C3506	135452	2841253-13e	220 pf 5% 50V N220 disc
C3507	149147	2841262-6	300 pf 5% 50V N750 disc
C3508	135452	2841253-13e	220 pf 5% 50V N220 disc
C3509	149147	2841262-6	300 pf 5% 50V N750 disc
C3510	143871	2841252-63a	100 pf 5% 50V NPO disc
C3511	143874	2841252-83a	150 pf 5% 50V NPO disc
C3512	146249	2840391-63a	18 pf ±.1 pf 50V NPO disc
C3513	143874	2841252-83a	150 pf 5% 50V NPO disc
C3514	146831	2841255-40r	.022 uf 20% 50V Z5V disc
C3515	143879	2841253-90m	1000 pf 20% 50V Z5P disc
C3516	143882	2841255-30m	.01 uf 20% 50V Z5P disc
C3517	143871	2841252-63a	100 pf 5% 50V NPO disc
C3518	143882	2841255-30m	.01 uf 20% 50V Z5P disc
C3519	143871	2841252-63d	100 pf 5% 50V N150 disc
C3520	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3521	143866	1491411-83a	27 pf 5% 50V NPO disc
C3522	143882	1491415-30m	.01 uf 20% 50V Z5P disc
C3524	143879	1491413-91m	1000 pf 20% 50V Z5P disc
C3525	143866	2841251-83a	27 pf 5% 50V NPO disc
C3526	143879	2841253-91m	1000 pf 20% 50V Z5P disc
C3527	143881	2841254-41m	2200 pf 20% 50V Z5P disc
C3528	143879	2840393-90m	1000 pf 20% 50V Z5P disc
C3601	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3602	149153	2840391-73a	22 pf 5% 50V NPO disc

REPLACEMENT PARTS

(continued)

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SYMBOL NO.	STOCK NO.	DRAWING NO.		DESCRIPTION
C3603	112969	1490939-703		.1 uf 20% 50V Y5T disc
C3604	148057	2840393-92m		1000 pf 10% 50V Z5P tubular
C3605	112969	1490939-703		.1 uf 20% 50V Y5T disc
C3606	149158	2841262-1		510 pf 5% 50V N750 disc
C3607	149160	2871417-2		100 pf 250V trimmer
C3608	146212	2841274-152		10 uf 35V electrolytic
C3609	148057	2840393-92m		1000 pf 10% 50V Z5P tubular
C3610	112969	1490939-703		.1 uf 20% 50V Y5T disc
C3611	149159	993286-141		.047 uf 5% 100V film
C3612	149163	993286-133		.022 uf 5% 100V film
C3613	149159	993286-141		.047 uf 5% 100V film
C3614	149162	2841273-362		2.2 uf 50V electrolytic
C3615	146184	2840393-12m		220 pf 10% 50V Z5P tubular
C3617	149164	993286-125		.01 uf 5% 100V film
C3618	143871	2840392-63j		100 pf 5% 50V SL tubular
C3619	139444	993286-75		.1 uf 10% 100V film
C3801	145033	993286-16		.33 uf 20% 100V film
				DIODES
CR3101	119597	1471872-10		NLAC detector
CR3102	119597	1471782-10		NLAC detector
CR3501	149033	1477074-2		Varactor
CR3601	119597	1471872-6		Audio mute switch
CR3602	119597	1471872-6		Audio mute switch
				BEADS
E3201	143814	1443391-112		Ferrite
E3202	143814	1443391-112		Ferrite
E3301	143814	1443391-112		Ferrite
E3302	143814	1443391-112		Ferrite
E3303	143814	1443391-112		Ferrite
E3304	143814	1443391-112		Ferrite
E3305	143814	1443391-112		Ferrite
E3305	143814	1443391-112		Ferrite
E3306	143814	1443391-112		Ferrite
E3501	143814	1443391-112		Ferrite
E3502	143814	1443391-112		Ferrite
E3503	143814	1443391-112		Ferrite
E3601	143814	1443391-112		Ferrite
J3002	149208	1466404-1		Connector — wafer
J3501	149144	1449128-2		Connector — R-F
J3502	149144	1449128-2		Connector — R-F
				COILS
L3101	149246	973966-80		130 uh
L3201	149173	973966-75		47 uh
L3202	149178	973966-74		39 uh
L3203	149170	973966-82		892 uh
L3204	149171	973966-83		560 uh
L3205	149173	973966-75		47 uh
L3206	149176	973966-71		22 uh
L3207	149173	973966-75		47 uh
L3208	149175	973966-69		12 uh
L3301	149167	973966-78		68 uh
L3302	149167	973966-78		68 uh
L3303	149184	1442642-27		68 uh
L3304	149168	973966-79		82 uh
L3304	149168	973966-79		82 uh
L3305	149184	1442642-27		22 uh
L3306	149176	973966-71		22 uh
L3401	149177	973966-73		36 uh
L3402	149195	1467370-3		34-60 uh symmetry adjust
L3403	149193	1467370-2		10-19 uh center frequency
L3404	126833	1463679-5		15 uh
L3405	149175	973966-69		12 uh
L3501	143832	1467283-2		61.25 MHz osc.
L3502	143832	1467283-2		67.25 MHz osc.
L3503	149174	1467283-5		62.75 MHz trap
L3504	149174	1467283-5		56.75 MHz trap
L3505	143832	1467283-2		Band pass
L3506	143832	1467283-2		Band pass
L3507	149192	1496280-1		.15 uh
L3509	149186	1467685-12		10 uh 4.5 MHz adjust
L3601	149165	973966-76		51 uh
L3602	149169	973966-81		2 uh
L3603	149165	973966-76		51 uh
L3604	149185	1445885-1		1795 mh
P3001	149182	1477678-104		Connector — 4 pin
				TRANSISTORS
Q3101	143794	1417306-12		NLAC buffer
Q3102	149040	1417387-1		NLAC amp
Q3103	143794	1417306-12		NLAC amp
Q3104	143794	1417306-12		NLAC output driver
Q3201	143794	1417306-12		Phase corrector
Q3202	143794	1417306-12		Video buffer
Q3301	143794	1417306-12		Delayed video driver
Q3302	143794	1417306-12		Vertical detail driver
Q3303	143794	1417306-12		Chroma/vertical detail
Q3304	143794	1417306-12		Chroma driver
Q3305	145776	1417303-3		Chroma buffer
Q3306	143794	1417306-12		Lumanance buffer
Q3401	143794	1417306-12		Video buffer
Q3402	143794	1417306-12		Video amp
Q3403	143794	1417306-12		Clock phase shifter
Q3404	143794	1417306-12		Clock buffer
Q3405	145395	1417318-7		Transducer driver
Q3406	149041	1417351-2		Transducer driver
Q3407	145395	1417318-7		Transducer driver
Q3408	149041	1417351-2		Transducer driver
Q3601	148070	1417411-1		Defect sample and hold
Q3801	145395	1417318-7		12V regulator
				RESISTORS
				CAUTION: Before replacing resistors not listed here see Item 3 of Related Schematic Notes for tolerance rating.
R3118	829010	993113-177	*	
R3202	147615	1479265-20		Control video level
R3304	146263	1479265-14		Control delayed video
R3312	146175	1479265-19		Control chroma level
R3315	428115	993218-685		330 ohm 2% 1/4W film
R3317	146175	1479265-19		Control vert detail level
R3322	428115	993218-685		330 ohm 2% 1/4W film
R3323	428115	993218-685		330 ohm 2% 1/4W film
R3324	428115	993218-685		330 ohm 2% 1/4W film
R3325	830113	993290-204	*	
R3328	143849	1479265-9		Control lum channel null
R3329	143849	1479265-9		Control chroma channel
R3402	146263	1479265-14		Control modulation depth
R3404	141617	993218-707		2700 ohm 2% 1/4W film
R3407	436170	993218-704		2000 ohm 2% 1/4W film
R3408	239954	993218-715		5600 ohm 2% 1/4W film
R3412	146175	1479265-19		Control VXCO gain
R3418	147960	993272-341	*	
R3419	143848	1479265-13		Control phase det. gain
R3438	147040	993218-472		1.3 meg ohm 5% 1/4W film
R3442	148893	993218-483		3.9 meg ohm 5% 1/4W film
R3444	146263	1479265-14		control
R3446	829022	993113-185	*	
R3449	829033	993113-189	*	
R3511	249555	993218-721		10k ohm 2% 1/4W film
R3512	428594	993218-379		180 ohm 2% 1/4W film
R3515	428116	993218-713		4700 ohm 2% 1/4W film
R3522	147591	993218-485		4.7 meg ohm 5% 1/4W film
R3524	502527	82283-103	*	
R3602	829010	993113-177	*	
R3610	427655	993218-181		3.3 meg ohm 10% 1/4W film
R3801	428111	993218-716		6200 ohm 2% 1/4W film
R3802	419997	993218-701		1500 ohm 2% 1/4W film
R3803	830010	993290-177	*	
S3501	149141	1464550-12		Switch — channel selector
S3502	149142	2870880-1		Switch — R-F output
S3503	149142	2870880-1		Switch — antenna
				INTEGRATED CIRCUITS
U3201	149036	1421760-1		Video FM demodulator
U3301	149039	1421752-1		Comb filter/defect correction
U3401	149018	1421754-1		Quad OP amp
U3402	149034	1421761-1		Video convertor
U3501	149037	1421758-1		R-F modulator
U3601	149035	1421760-2		Audio FM demodulator
U3801	149038	1421753-2		15V regulator
VR3301	149042	99202-315		Diode — zener 9.1V
Y3401	149139	1107863-14		Crystal — 3.58 MHz
Y3402	149138	1107863-17		Crystal — 5.11 MHz
	149210	1467822-1		Cover — R-F modulator
	149143	2870862-6		Spring — antenna lever
	135255	59149-106		Nut — for connector J3501, J3502
				PW AC IN
	149134	2812546-502	•	PW AC board complete
C1	145679	2870613-225	*	Capacitor
C2	149201	2870697-219	*	Capacitor
F1	426973	1446691-7	*	Fuse — 1 Amp SB
F2	149004	1446691-10	*	Fuse — 1/4 Amp SB
L1	149199	1495292-3	*	Choke — R-F line
R1	502518	82283-101	*	Resistor

REPLACEMENT PARTS

(continued)

PRODUCT SAFETY NOTE—Components marked with a (*) have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2 of this Service Data. Do not degrade the safety of the set through improper servicing. Although assemblies as a whole may not be marked with a (*), replacement of RCA assemblies with other assemblies not RCA approved may result in a safety hazard.

MECHANICAL ASSEMBLY

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
1	149049	2812511-501	Turntable w/follower
2	149105	2840959-1	Screw — turntable height adjust
3	149058	2871082-1	Retainer — lower bearing
4	149052	2812511-510	Bearing — kit turntable w/felt & retainer
5	149057	2871081-1	Retainer — upper bearing
6	149025	2840900-1	Stabilizer — belt
7	149056	2840736-2	Grommet — & spacer for turntable motor mtg.
8	149211	2812511-508	Fan — turntable motor blower
9	149140	2812536-501	Stylus sweeper assembly
10	149103	2840940-1	Spring — torsion for sweeper
11	120367	93605-103	Retainer — "E" ring for sweeper assy.
12	149102	2812536-504	Cam — actuating left receiver pad assembly
13	149131	2840786-1	Screw — latch lever w/retainer & washer
14	149101	2812540-507	Arm — pivot, caddy door actuator/pin assembly
15	149100	2812540-508	Spring — counter balance assembly
16	149099	2840735-2	Retainer — "O" ring for counter balance
17	149051	1467385-2	Knob — function lever
18	149237	2812540-511	Shaft — detent assembly
19	149135	2840793-1	Cam — function for switch S2
20	149227	2840945-1	Bracket — function lever
21	149228	990102-123	Screw — w/nut & washer for switches
22	149226	2871450-1	Bracket — power switch
23	149137	999340-403	Nut — retainer for turntable slider cam
24	149072	2840754-1	Follower — turntable shaft
25	149136	2812511-509	Cam — pulldown w/pin assembly
26	149050	2871099-1	Cap — spindle
27	149120	2871094-1	Washer — spindle cap
28	149121	2871097-1	Yoke — turntable retainers w/screw
29	149030	2870870-3	Spring — compression spindle shaft cap
30	149093	990064-103	Screw — retainer for turntable yoke
31	149024	2871083-1	Cam — turntable slider
32	149023	2812511-506	Lever — & pin assembly turntable pulldown
33	149022	2871006-1	Rod — antenna switch actuator
34	149021	2840764-1	Cap — antenna switch adjust w/screw
35	149092	8888539-601	Screw — set for cap (Item 34)
36	149074	2840620-1	Insert — plastic for pulldown lever & pin assy.
37	149075	2840619-1	Link — pulldown lever and pin
38	149077	2870870-5	Spring — pulldown link
39	149026	1467368-1	Belt — turntable drive
40	149091	2840937-1	Cap — retaining for ring rod
41	149076	2812511-505	Ring — pulldown assembly
42	149079	2840913-1	Pivot — turntable ring rod
43	149089	1467371-1	Cap — rail left rear
44	149090	2870884-1	Cap — retaining for crank arm cam & right receiver pad
45	149078	1467334-1	Guide — right rail
46	149082	1467332-1	Guide — left rail
47	149081	2871002-1	Cam — crank arm rear receiver
48	149080	2840676-1	Pin — for crank arm (Item 47)
49	149086	999340-2	Nut — push-on for caddy door cover
50	149060	1439546-1	Cover — plastic caddy door
51	149063	1439540-1	Door — caddy entry less cover
52	149083	2840728-1	Screw — shoulder, caddy door retainer
53	149029	2870862-3	Spring — caddy door
54	149109	2840604-1	Arm — pivot, slider actuating
55	149088	2840938-1	Cap — retainer for sweep latch
56	149031	2840912-1	Spring — for sweeper cam
57	149118	2812536-502	Arm — sweeper latch
58	149117	1467358-1	Arm — latch
59	149116	2870862-1	Spring — for arm latch (Item 58)
60	149115	2871441-1	Retainer — side caddy
61	149032	2870847-1	Retainer — side caddy
62	149114	2870846-1	Plate — retainer center caddy
63	149113	2840631-1	Shaft — carriage
64	149112	2871011-1	Pad — right receiver
65	149111	2840795-1	Pin — pivot for right receiver pad
66	149028	2870862-7	Spring — tension for right recvr pad
67	149027	2840638-1	Spring — spine push back
68	120367	93605-103	Retainer — for Items 25 & 65
69	149110	1467399-1	Defeat — caddy lock
70	149028	2870862-7	Spring — caddy lock defeat
71	149225	2840793-2	Cam — function for S3 & S4
72	149129	2840780-1	Cap — retainer for Items 32 & 58
73	149061	1467392-1	Cover — motor fan
74	149222	2840994-1	Spring — landing latch
75	149223	2871436-1	Pivot — latch landing
76	149224	1467816-1	Bracket — landing latch
77	149126	2840767-1	Yoke — detent
78	149130	990068-105	Screw — for detent yoke
79	149104	2870870-6	Spring — compression for detent wheel
80	149108	2812535-502	Pad — receiver assembly front bottom
81	149107	2812535-503	Pad — front receiver hold down
82	149013	1467395-1	Drum — photo interupter
83	149217	8888539-621	Screw — set for drum (Item 82)
84	149059	2812535-509	Cam — plunger for ID switch
85	149238	2841727-1	Clip — grounding
86	149241	2840958-1	Spring — torsion
87	149242	2812535-504	Arm — rear receiver pad
88	149243	2871096-1	Spring — torsion rear receiver pad

ARM ASSEMBLY

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
	149002	2812500-501	‡Arm — pick-up less cartridge 149000 (only if PW200 is defective)
89	149001	2812502-501	Transducer assembly complete
90	149003	2812500-504	Solenoid — stylus lifter assembly
91	149096	2812500-502	Cover — cartridge assembly w/latch
92	149071	2840691-1	Spring — latch slide
93	149098	2840784-1	Screw — roller retaining
94	149240	2840648-1	Roller — pickup arm
95	149097	2840785-1	Screw — transducer pressure adjust
96	149070	2840645-1	Link — transducer actuator
97	149123	2870822-1	Cover — resonator board
98	149069	2871404-1	Cover — preamp board
99	149068	2840729-1	Cover — for transducer link
100	149067	2812548-502	Cam — pickup arm pushback assembly
101	149119	2840996-1	Spring — for pushback release rod
102	149012	2871079-1	Rack — pickup arm servo drive
103	149244	2840646-1	Spring — compression transducer pressure

SERVO GEAR ASSEMBLY

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
104	149043	1467393-1	Bracket — front servo assembly
105	149044	1467394-1	Bracket — rear servo assembly
106	149009	812540-02	Clutch — servo assembly complete
107	149011	2812540-512	Gear — worm drive & shaft assembly
108	149125	2840919-1	Gear — pinion & belt pulley
109	149045	1467368-2	Belt — servo drive
110	149124	8863899-1	Retainer — grip ring for servo pinion
111	426463	93605-106	Retainer — "E" for shaft & gear assembly
112	149128	2812540-509	Roller — for function lever detent assembly

MISCELLANEOUS ELECTRICAL AND MECHANICAL

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
B1	149005	2812511-507	* Motor — turntable drive assembly
B2	149006	2870801-1	Motor — servo drive
0S1	149047	2812546-501	Photo — PW assembly
P501	149182	1477678-104	Connector — 5 pin
P502	139145	1477678-103	Connector — 4 pin
P901	149183	2871051-10	Connector — 11 pin
R2	149046	2871076-1	Resistor — control radius sense
S2	149179	1495451-1	* Switch — power
S3	149221	1495451-7	Switch — DC play
S4	149179	1495451-1	* Switch — AC play
S5	149106	2812535-508	Switch — side ID (bottom)
S6	149198	1495451-10	Switch — DC spine
S6/S8	149197	2812535-505	Switch — spine sensor assembly
S7	149218	1495451-8	Switch — stylus clean
S8	149219	1495451-11	* Switch — AC spine

Pick-up Arm Assembly, less cartridge, replaceable as complete item in warranty only if PW200 resonator circuit is defective.

REPLACEMENT PARTS

(continued)

PRODUCT SAFETY NOTE—Components marked with a (*) have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2 of this Service Data. Do not degrade the safety of the set through improper servicing. Although assemblies as a whole may not be marked with a (*), replacement of RCA assemblies with other assemblies not RCA approved may result in a safety hazard.

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
T1	149008	2811806-1	* Transformer — power
	149229	1467812-501	* Cord — power
	149231	2840997-1	Key — polarizing for P501
	149230	2840948-1	Key — polarizing for P901
	114918	990327-128	Nut — for R2
	139506	1449797-1	Terminals for P501, P3001
	149206	2871068-2	Terminals for P901
			INSTRUMENT ASSEMBLY
	149066	2871039-1	Button — aux door release
	149236	1467837-1	Button — customer switches
	149216	1439501-1	Cabinet — bottom
	149215	2812503-502	Cabinet — top
	149064	1467378-1	Door — aux cabinet
	149062	2840726-1	Foot — pad
	149084	990303-86	Nut — spring cabinet retaining
	149087	990303-85	Nut — spring base mounting
	149212	2871047-1	Overlay — aluminum function
	149958	1439533-2	Overlay — logo
	149094	1467800-1	Retainer — metal, customer button

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
	149095	1467379-1	Spring — aux door button
	149214	2870805-1	Trim — brushed aluminum
			STYLUS CARTRIDGE
	149000	2812539-501	Cartridge — video pickup stylus
			ACCESSORIES
	144518	2871464-1	Balun — antenna matching (75 to 300)
	149054	2871056-1	Balun — receiver matching (300 to 75)
	148048	2871472-1	Cable — antenna extension 300 ohm
	147173		Cable — 75 ohm coax 5' lg.
		2814409-1	Book — Instruction
			TOOLS
	149073	1439026-501	• Caddy — less disc
	149235	2812554-501	• Disc — test
	149239	2871461-1	• Gauge — height
	149053	2811825-2	• Lubricant — oil
	149247	2811870-1	• Grease — rykon "O"
	149248	891997-109	• Grease — DC 111 silicone

Specifications Subject to Change Without Notice

CONSULT YOUR RCA DISTRIBUTOR FOR REPLACEMENT PARTS AND ACCESSORIES

No O.S. NEEDED

FILE
CED - 1
MASTER
M
2

RCA

VideoDisc Player CED

SERVICE INFORMATION

CONTAINS ADDITIONAL SERVICE DATA INFORMATION. FILE WITH DATA INDICATED.

MODEL SFT100

RCA Corporation
Consumer Electronics
Technical Publications
600 N Sherman Dr; Indianapolis, Indiana 46201

Date: June 3, 1981

Subject: Landing Latch/Reduction Gear Assembly

Two symptoms may be encountered in some players that are associated with the landing latch assembly. DO NOT DECREASE LANDING LATCH SPRING TENSION — STYLUS DAMAGE CAN RESULT.

SYMPTOM I

At the beginning of a disc the picture repeats and/or jumps — similar to a locked groove; the servo does not pull the arm free of the landing latch because the clutch slips.

Corrective Action:

A. Check the adjustment/position of the pickup arm servo drive rack (102). The teeth on the rack should completely engage the landing latch gear and clutch gear but should not exert excessive pressure on either. If necessary, loosen the two rack mounting screws and position correctly

After correct rack position is confirmed, if symptom is still evident:

B. Check clutch action:
In LOAD/UNLOAD, clutch should be free (cam engaged).
In PLAY/OFF, cam should be free (clutch engaged).

C. If cam is not completely free in PLAY/OFF, adjust clutch tension as follows:
   1. Remove and disassemble the reduction gear assembly. See complete instructions in Service Data CED-1. Briefly, unsolder motor leads; disconnect declutch link; remove four hex head mounting screws (to gain access to inside screws, remove landing latch and lift arm out of way).

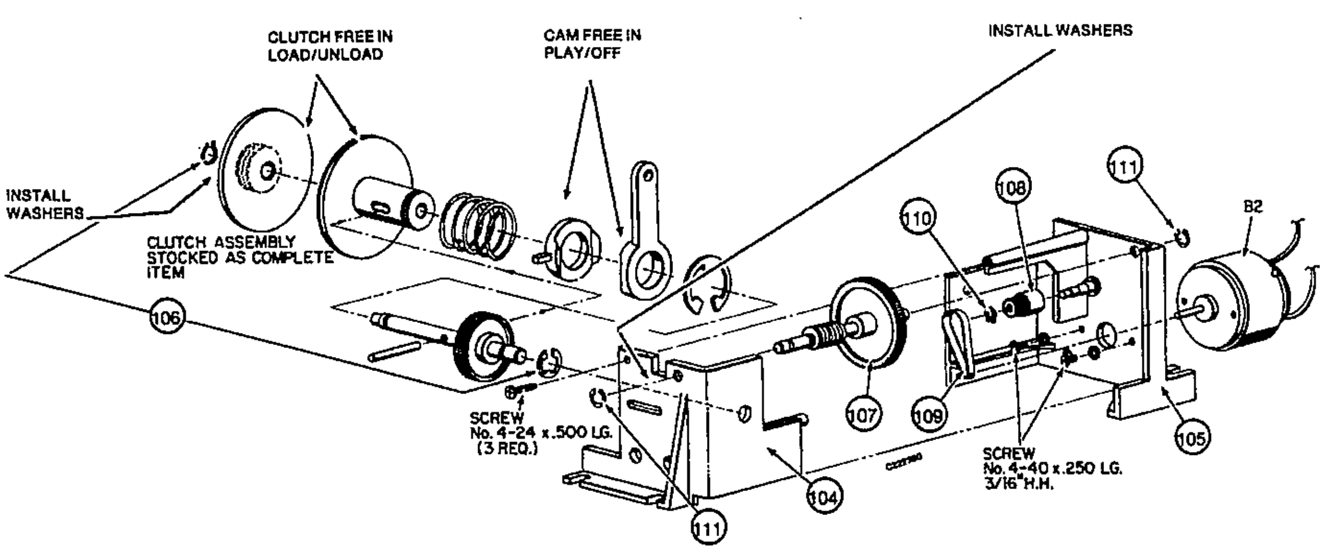
(OVER)

First Edition — First Printing

2. Separate the gear assembly — remove three phillips head screws and either worm gear retaining "C" ring. Clutch assemlby can now be removed.

3. Remove the grip ring from the clutch end of the shaft, add two .010" washers (stock no. 152569, drawing no. 2841781-1), replace the grip ring and check clutch assembly operation per Step B. Add or remove washers as required to achieve proper clutch adjustment.

4. Reassemble the gear assemlby, install in the player, and check player operation.



Reduction Gear Assembly Exploded View

SYMPTOM II

About ten to fifteen minutes into the program, stylus skips forward over one or two minutes of programming. As the landing latch spring releases, forward pressure is applied to the arm. Excessive end play in the worm gear will allow the arm to jump forward slightly.

Corrective Action:

A. Minimize worm gear end play — remove the "C" ring from either end of the worm gear shaft and add shim washers as required to eliminate end play. Obtain washers locally — shaft diameter is 3/16", total thickness required may vary from .030 to.150. Replace the "C" ring and check play operation.

RCA

VideoDisc Player CED
SERVICE INFORMATION

CONTAINS ADDITIONAL SERVICE DATA INFORMATION. FILE WITH DATA INDICATED.

MODEL SFT100

RCA Corporation
Consumer Electronics

Technical Publications

600 N Sherman Dr | Indianapolis, Indiana 46201

Date: **June 3, 1981**

Subject: Slider Cam/S2-S4 Adjustment Procedure

Correct turntable slider cam (item #31) adjustment is critical to proper player operation. Switch S2 and S4 adjustments are critical to proper "PLAY" and "OFF" functions.

In the event symptoms are encountered which seem to relate to improper slider cam and/or S2-S4 adjustment (such as "only plays in OFF mode," etc.), first determine if the cause is incorrect adjustment **or** operator misuse (**such as attempting to move the function lever from LOAD/UNLOAD to PLAY while a caddy is in the player**). To do this check S2 power "on" switch and S4 AC play switch action and slider cam operation as the function lever is moved from LOAD/UNLOAD to PLAY.

A. Adjustment only is required if:

S2-S4 switch sequence is correct (S2 "on" in both LOAD/UNLOAD and PLAY, S4 "off" in LOAD/UNLOAD and "on" in PLAY) **but** turntable shaft follower is still on ramp portion of slider cam; or vice versa — switch seqeunce is wrong but turntable shaft follower is on flat portion.

B. Operator misuse is indicated if:

S2-S4 switch sequence is not correct **and** turntable shaft follower is on ramp portion of cam.

If customer misuse is indicated, pressed fit shaft/function lever elbow connection has been damaged.

1. The elbow-shaft assembly (119) (stock no. 151403, drawing no. 2812540-505) **must** be replaced.
2. Slider cam/S2-S4 adjustment procedure **must** be performed.

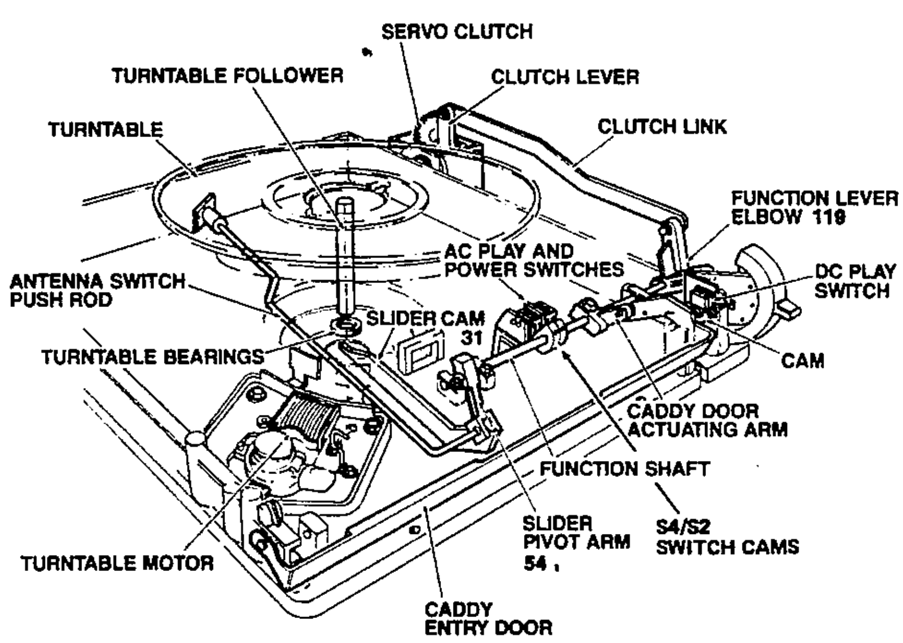
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Slider Cam And Switch Adjust (See Service Data Page 3-1 and 3-2)

1. Loosen ¼" hex head screw in slider cam actuating pivot arm.
2. Place function lever in "PLAY" position. Adjust pivot arm to position turntable shaft follower on the flat surface (highest level) of the slider Cam (item 31). The turntable shaft follower (item 24) must not rest on the slope portion of the slider Cam (item 31) in either the "LOAD" or "PLAY" mode.
3. Re-tighten ¼"screw in slider cam.
4. Adjust S2 cam per Service Data — switch must be "off" in OFF and "on" in PLAY.
5. Adjust S4 cam per Service Data — switch must be "on" in PLAY and "off" in LOAD/UNLOAD

CAUTION: Do not use force when tightening switch cams or pivot arms as screw threads will be stripped.



VideoDisc Player Top View

FILE
CED - 1
and Supplement(s)

RCA

VideoDisc Player CED

SERVICE INFORMATION

CONTAINS ADDITIONAL SERVICE DATA INFORMATION. FILE WITH DATA INDICATED.

MODEL SFT100

RCA Corporation
Consumer Electronics
Technical Publications
600 N Sherman Dr! Indianapolis. Indiana 46201

Date: September 25, 1981

Subject: Intermittent Color Fade



Service Strobe
Stock No. 153331

A. Determine Turntable Speed

Use the service strobe to determine if the intermittent color fade symptom is due to improper turntable speed.

With the player "off" and a service disc inserted, place the strobe over the turntable spindle through the access door. (Player must be operated under a fluorescent light for strobe response.) Turn player on and observe monitor until symptom occurs. Immediately observe strobe. If wedges on strobe move clockwise, turntable speed is fast; if wedges move counter-clockwise, turntable is slow. Wedges will stand still when speed is correct at 450 RPM.

B. Check Synchronizer Plate Adjustment

If improper turntable speed is confirmed:

1. Remove cabinet top, PW500 board, the metal shield, and the arm assembly.
2. Remove drive belt and turntable assembly.
3. Place function lever in load position.
4. Place synchronizer plate gauge (Stock #153308) on the player with sync plates visible through gauge opening.

(OVER)

First Edition — First Printing

FILE
CED - 1
and Supplement(s)

RCA
VideoDisc Player (CED)
SERVICE INFORMATION

CONTAINS ADDITIONAL SERVICE DATA INFORMATION. FILE WITH DATA INDICATED.

MODEL SFT100

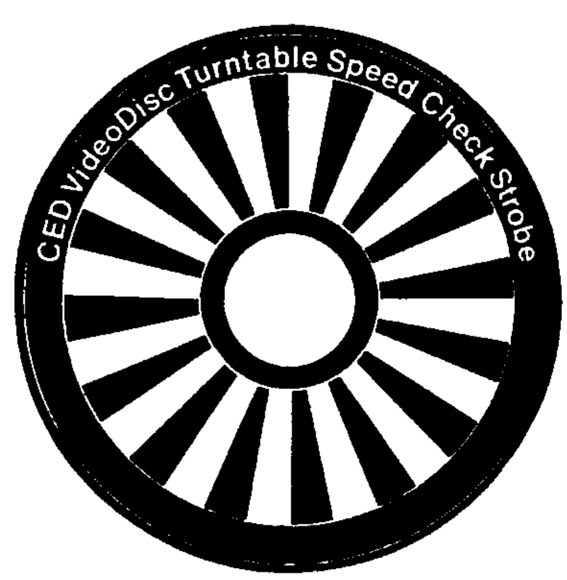
RCA Corporation
Consumer Electronics
Technical Publications
600 N Sherman Dr' Indianapolis, Indiana 46201

Date: **September 25, 1981**

Subject: **Use of the CED VideoDisc Turntable Speed Check Strobe**

Specifications

The "CED VideoDisc Turntable Speed Check Strobe" is designed to operate in conjunction with a florescent light connected to a 60 hertz AC supply. The sixteen wedges are spaced to give the visual impression that they are standing still when turntable speed is exactly 450 RPM, the correct speed of CED Video Disc Players.



SERVICE STROBE
STOCK NO. 153331

(over)

First Edition — First Printing

Use

1. Place a program/test disc in the player.
2. Remove the access cover and place the service strobe on the program/test disc. A small piece of double-sided tape may be used to adhere the strobe to the disc.
3. Move the function lever to the play position.
4. Look at the strobe after a picture has appeared on the TV.
5. If the turntable is up to speed and synchronized, the black and white wedges will be stationary.
6. If the turntable is not up to speed or synchronized, two basic symptoms will be seen on the strobe.
   a. Black and white wedges continuously move clockwise or counter-clockwise. Turntable is not running at 450 RPM. Synchronizer is not operating at all (missing magnetic strip or not magnetized, etc.) or the free speed is well outside the pull-in range of the synchronizer. (Clockwise rotation means speed is greater than 450 RPM and counter-clockwise means speed is less than 450 RPM.)
   b. Black and white wedges remain stationary for short periods of time (may be a few seconds to a few minutes). Movement of the wedges will correspond to the loss of color or the loss of horizontal sync on the TV picture. Only during loss of color or loss of horizontal sync will wedges show movement. (Clockwise movement of the wedges mean speed is increasing and counter-clockwise movement of the wedges means speed is decreasing.)
7. If movement of the wedges is noted, appropriate repairs must be made to the player.
8. Remove the service strobe. Never leave the service strobe on the disc when inserting the disc in the caddy. This may damage the lip seal on the caddy. Also, if you leave the service strobe on the disc, the next time you use the disc, the strobe may be placed between the turntable and the disc. This may result in the loss of conductivity between the disc and the spindle. Loss of conductivity could damage the stylus from a static discharge.
9. Replace the access door.

F I L E
CED

RCA

VideoDisc Player CED

SERVICE INFORMATION

GENERAL INFORMATION NO. 2

CONTAINS ADDITIONAL SERVICE DATA INFORMATION. FILE WITH DATA INDICATED.

THIS PUBLICATION CONTAINS GENERAL INFORMATION. FILE AT THE FRONT OF THE APPROPRIATE SERVICE DATA BINDER.

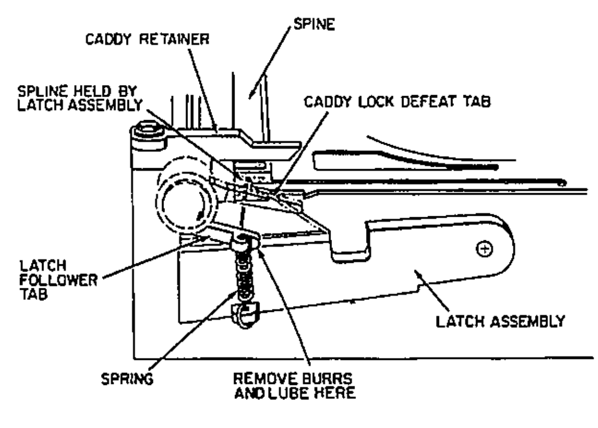
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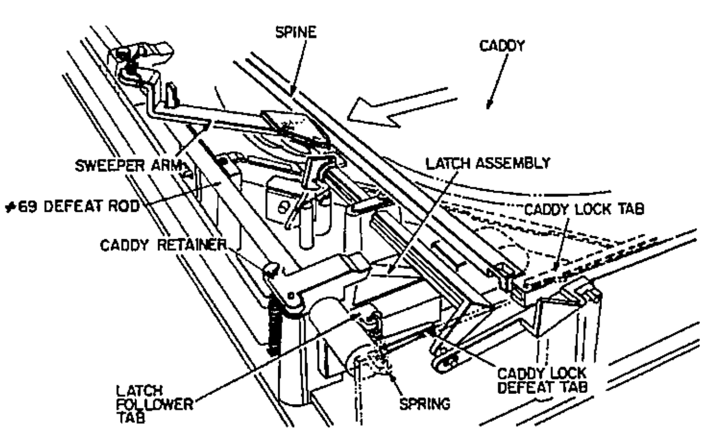
DATE: October 7, 1982

SUBJECT: Player Won't Accept Disc

Should this symptom exist, check caddy lock defeat operation. Caddy lock defeat rod (Symbol #69) is lightly waxed to prevent corrosion. A build-up of wax at the three center post wells may keep the defeat rod from pivoting, thereby preventing defeat tabs from caddy entry.

If caddy lock defeat rod fails to pivot, remove rod from the centerplate wells. Clean the wells and the rod at the points of contact with isopropyl alcohol to remove wax. Next check the defeat tabs and the latch follower tabs for burrs. Remove any burrs with a sharp knife to provide smooth surface contact with the latch assembly. Using RYKON O lubricant (Stock No. 149247), sparingly lubricate the wells, the rod pivot points, and the latch assembly at the point of the follower tab contact. See figures below.





Caddy Lock Defeat Operation

NOTE: RYKON O is a synthetic-type lubricant which is safe for use on plastics. Petroleum-base lubricants should not be used on plastics, since stress damage will usually occur.

FILE
CED - 1

RCA

VideoDisc Player CED

SERVICE INFORMATION

CONTAINS ADDITIONAL SERVICE DATA INFORMATION. FILE WITH DATA INDICATED.

MODEL SFT100

RCA Corporation
Consumer Electronics
Technical Publications
600 N. Sherman Dr.| Indianapolis, Indiana 46201

Date: October 7, 1982

Subject: SFT100 VideoDisc Player
Troubleshooting Hints

This bulletin is designed to aid the technician in servicing the SFT100 VideoDisc Player by providing troubleshooting hints which were compiled from field service experience. The various symptoms that have been encountered are listed under Symptom Description, and the items that caused the symptom are listed under Corrective Action. Previously issued relevant Service Information is listed under Reference Data. It is suggested that this more detailed data be reviewed prior to making repairs.

Symptom Description	Corrective Action	Reference Data
Intermittent Color Dropout/ Intermittent Color Sync (Turntable Speed Changing)	Using strobe, check turntable speed. If off, adjust turntable motor sync plates per CED-1 Service Information No. 3. Replace stretched turntable belt, stock no. 152751. Adjust motor mount to assure belt runs on pulley crown.	File CED-1 Service Information No.3 Service Information No. 4 Service Data CED-1

Continued on next page

First Edition — First Printing

Symptom Description	Corrective Action	Reference Data
At 10 to 18 minutes into all discs, stylus skips forward over one to two minutes of the program.	Reduce excessive end play of worm gear, Symbol No. 107, by adding washers between "C" Ring Symbol No. 111, and reduction gear assembly housing. Reduce play to .010"± .005".	File CED-1 Service Information No. 1 Symptom No. II Service Data CED-1
Rubbing noise when function lever is returned to Load position from Play position.	Check PW AC IN board cover for warpage. If warped, replace with stock no. 151972, or elongate holes, push down, and tighten screws.	CED-1 Service Data
Picture repeats or jumps similar to locked groove. (Servo does not pull arm free of landing latch because clutch slips or improper landing latch operation.)	Check adjustment of pickup arm servo drive rack gear, Symbol No. 102. Check landing latch gear, Symbol No. 114. If unable to adjust rack gear to landing latch gear for smooth operation, replace landing latch assembly, stock no. 151973. Check clutch operation. In Load/Unload, clutch should be free (cam engaged). In Play/Off, cam should be free (clutch engaged). If clutch cams are not completely free in Play/Off position adjust clutch tension by adding one or two .010" washers, Symbol 121, stock no. 152569, to clutch shaft as needed.	File CED-1 Service Information No. 1 Symptom I Service Data CED-1
Random skipping sometimes with intermittent visual search operation.	Check turntable height with field height gauge, stock no. 149239. See Data for proper adjustment procedure. Check stylus cartridge.	CED-1 Service Data
	Try known good disc to eliminate possible disc problem	
	Check servo detector balance adjustment R520 and arm servo position adjustment R917. See Data for adjustment procedure.	Service Information No. 6
	Check pick-up arm for smooth travel — no hang-ups.	
Plays in Off position.	Check turntable slider cam and S2/S4 switch cam adjustments. If S2/S4 switch cam adjustments are incorrect and turntable shaft follower is on ramp portion of cam, elbow-shaft assembly Item 119, may have been damaged (stripped) by operator misuse. (Forcing function lever with caddy in).	CED-1 Service Data Service Information No. 2
	Replace elbow and shaft assembly, stock no. 151403 with spring loaded function lever kit, stock no. 153293.	SPS 3601 Special instructions included with parts kit.

Symptom Description	Corrective Action	Reference Data
Lose up to one minute of program when pause function is reset.	Adjust stylus lifter solenoid. If lifter is early type (non-adjustable), replace with stock no. 149003 adjustable type (elongated hole in one end of bracket).	SPS-3626 Special instructions covering installation and adjustment, and included with new part.
Arm skates forward without command. LED indicator stays in "--" mode. (Regulated 15V supply checks low)	Check U3801, 15V Regulator.	CED-1 Service Data
Loss of color sync (Turntable speed okay).	Check U3301 Comb Filter operation.	CED-1 Service Data Training Workshop Manual SFT 1-1
Picture smeared and intermittent.	Check U3201 Video FM Demodulator operation.	CED-1 Service Data Training Workshop Manual SFT 1-1
No Color.	Check U3401 Quad OP amp operation.	CED-1 Service Data Training Workshop Manual SFT 1-1
No Play. LED display shows "00" in Load and Unload position (5V supply to microprocessor okay).	Check U502 microprocessor IC operation.	CED-1 Service Data Training Workshop Manual SFT 1-1
No Servo action, Rapid Access or Search modes.	Check U506 Stylus Position Detector IC operation.	CED-1 Service Data. Training Workshop Manual SFT 1-1
System muted — no DAXI or clock code output from DAXI Buffer.	Check U503 DAXI Buffer IC operation.	CED-1 Service Data Training Workshop Manual SFT 1-1
No sound, no video, LED display shows "--".	Check stylus cartridge.	CED-1 Service Data Training Workshop Manual SFT 1-1

FILE
CED

RCA

VideoDisc Player (CED)

SERVICE INFORMATION

General Information No. 3

CONTAINS ADDITIONAL SERVICE DATA INFORMATION. FILE WITH DATA INDICATED.

This publication contains General Information. File at the front of the appropriate Service Data binder.

RCA Corporation
Consumer Electronics
Technical Publications
P.O. Box 1976 | Indianapolis, Indiana 46206

Date: June 3, 1983

Subject: Dirty Styli on "F" and "G" Model Players

When dirty styli are encountered, the following procedures should be followed:

1. Check player. If dirty, thoroughly vacuum (do not blow clean).
2. Check stylus sweeper operation to assure it is functioning properly. (See Page 39 Workshop Training Manual SFT 1-1).
3. Check the resistance from disc to arm ground (Pin 6, J901) using a penny placed on the ungrooved area of an old disc.
4. If a disc to arm resistance of more than 50K ohm is measured, electrostatic discharge through stylus may result. This can cause debris on the stylus tip as well as stylus electrode damage.
5. Isolate the high resistance path by first measuring from disc to turntable spindle (Item 26), from spindle to ground lead attached to lower bearing housing, and last from lower bearing housing to arm ground.
6. Correct any ground path deficiencies. If the high resistance occurs between the disc and the turntable spindle, replace the turntable with Stock Number 156342 incorporating a disc ground spring. After replacement, recheck disc to arm resistance. Specification for the spring contact ball height is .025 to .060 inches above the turntable inner ring. Care should be exercised during service not to disturb this spring adjustment. If the spring is too low, it will not perform the grounding function. If it is too high, it may get jammed by the caddy causing spring, caddy, or disc damage.

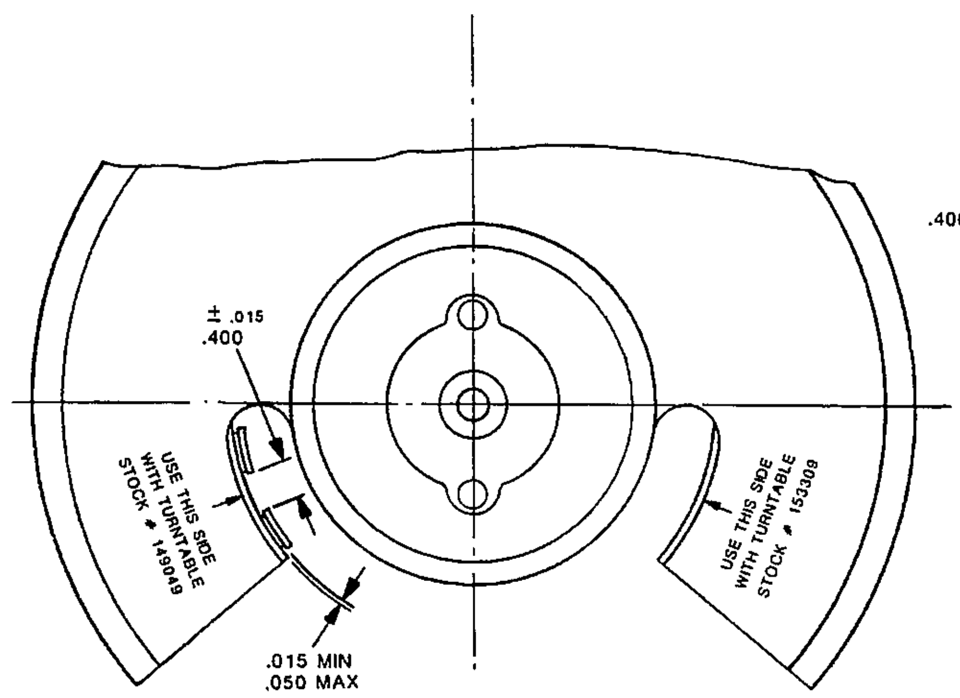
CAUTION: NEVER CLEAN OR ADJUST STYLI

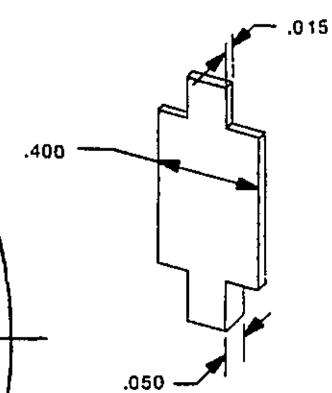
- The "In Player Sweeper" will do a good stylus cleaning job in normal operation.
- Stylus Parameters (Force: 65 ±5 milligrams, Laterial Bias: ± 2 milligrams, etc.) are very critical to proper operation, disc wear, and/or damage. *Styli should never be cleaned or adjusted*, either of which can change these parameters.
- When dirty styli are noted and the In Player Sweeper will not correct, find and fix the cause*; then if necessary replace the stylus cartridge. For optimum tracking performance when a stylus is replaced, adjust arm servo position control, R917 and servo detector balance control, R520. See Service Data for procedure.

*Dirty styli may be caused by:

- Debris in player
- Debris on disc
- Stylus sweeper inoperable
- Improper electrostatic discharge path

First Edition—First Printing





Feeler Gauge
Stock #153326

Synchronizer Plate Gauge Stock #153308

5. Note stock number on bottom of turntable removed from the player.

6. Position the sync plate gauge such that the plates are directly across from the number that matches the turntable stock number.

7. Position the turntable motor in the center of its rubber grommet mounting.

8. Check the spacing between the sync plates and the magnetic strip with the synchronizer feeler gauges (.015 one end, .050 other end).

9. The .050 guage must not pass between the sync plates and the magnetic strip.

10. The .015 gauge must pass between the sync plates and the magnetic strip.

11. Bend the sync plates as required to meet the above specifications. Sync plates must remain tightly mounted to the motor assembly, parallel to the turntable magnetic strip, and 0.400 inch separation between sync plates must be maintained.

12. Remove sync plate gauge and install turntable assembly. Check turntable rotation for clearance in load and play position. Also check to see that it turns freely in the bearings.

C. New Belt And Motor Mount Adjustment

1. Install new black turntable belt (Stock No. 152751).

2. Check if turntable belt is running on crown of turntable motor pulley. If not, adjust motor mounting to allow belt to run on pulley crown. (See service data for motor mounting adjustment procedure.)

3. Verify correct turntable speed using service disc and "speed check strobe".

4. Reinstall arm assembly, PW500 control board, and shield.

5. Test run player. Verify total performance.

6. Reinstall cabinet top and safety check.

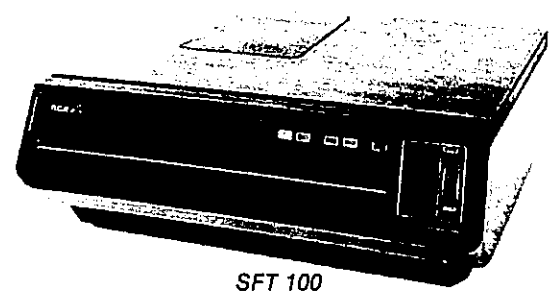
SelectaVision®
VideoDisc Player CED

Service Data

Model SFT 100

RCA Corporation
Consumer Electronics

Technical Publications
600 N Sherman Dr | Indianapolis, Indiana 46201



SFT 100

SAFETY CAUTION:

Before servicing this chassis, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Data.

SERVICE DATA CONTENTS

SPECIFICATIONS:

Power Input:	120 Volts AC, 60Hz
Power Consumption:	35 Watts
Antenna Impedance:	75 ohm in/out
RF Output Level:	3mV Maximum 1mv Minimum Switchable to Channel 3 or 4
Circuit Board Assemblies:	PW200 Resonator PW500 System Control PW700 NLAC & Noise Coring PW900 PreAmp PW3000 Signal Processing PW AC IN AC Input PW Photo Time Indication
Weight:	Approximately 20 pounds (9.072 kg.)
Dimensions:	Width - 17" (431.8mm) Depth - 15 1/2" (393.7mm) Height - 5 3/4" (144.05mm)
Turntable Speed:	450 RPM
Play Time:	2 hours (1 hour per disc side)
Video Signal System:	EIA Standard NTSC Color Signals
Disc Play System:	CED - Capacitance Electronic Disc

First Edition — First Printing

SAFETY PRECAUTIONS

Before returning any instrument to the customer a safety check of the entire VideoDisc Player should be made. The service technician must be sure that no protective device built into the instrument by the manufacturer has become defective or inadvertently defeated during servicing, so be sure you conduct all the checks and tests below.

Comply with all caution and safety related notes located on or inside the VideoDisc Player cabinet and on the player deck.

WARNING: Alterations of the design or circuitry of this VideoDisc Player should not be made.

Any design alterations or additions such as, but not limited to, circuit modifications, auxiliary speaker jacks, switches, grounding active or passive circuitry, use of unauthorized cables, accessories, etc. may alter the safety characteristics of this VideoDisc Player and potentially create a hazardous situation for the user.

Any design alterations or unauthorized additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

Use only authorized lubricants where lubricants are specified. If you lubricate, remove any excess lubricants.

When reassembling the VideoDisc Player, always be certain that all the protective devices are put back in place, such as nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, isolation resistor capacitor networks, etc.

When service is required, observe the original lead dress. Components that indicate evidence of overheating or other electrical or mechanical damage should be replaced.

Do not change component configuration (spacing, clearance, etc.). Example: Resistor spaced off of printed board.

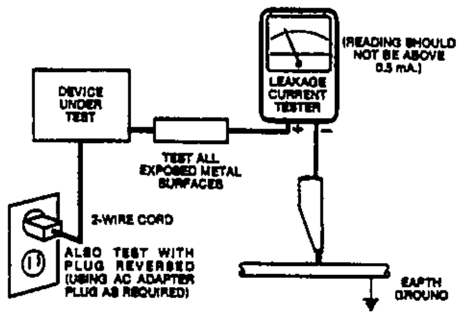
Leakage Resistance Cold Check

With the AC plug removed from the 120V AC source, place a jumper across the two plug prongs. Turn the instrument AC switch on by placing the function lever in the "play" position. Using an ohmmeter, connect one lead to the jumpered AC-plug and touch the other lead to all push buttons/customer controls, all customer exposed metal or conductive parts of the cabinet such as screwheads, metal or metalized overlays, control shafts, etc. except antenna connections.

The resistance measured should not be less than 1 megohm. Now measure the resistance of the antenna connections which should not be less than one megohm or greater than 5.2 megohms except for the center connection of the F connector that feeds the TV receiver which measures "open" when the function switch is in the "play" position. Any resistance value below or above the values specified indicates an abnormallty which requires corrective action. Repeat all the preceding tests with the function switch in the "off" and "load/unload" positions. All the preceding tests should be conducted with a disc in the player and repeated without a disc in the player.

Leakage Current Hot Check (On Completely Assembled Instrument) With a Disc in the Player and all Tests Repeated without a Disc in the Player)

Plug the AC line cord directly into a 120V AC outlet (do not use an isolation transformer for this check). Use a Leakage Current Tester or a metering system which complies with American National Standards Institute (ANSI C101.1 "Leakage Current for Appliances") and Underwriters Laboratories (UL) 1410 (50.7). Measure for current with the function switch in the "play" position and repeat with the function switch in the "load/unload" and "off" positions from all customer exposed metal or conductive parts of the cabinet (antenna connections, screwheads, metal or conductive overlays, customer push buttons/controls, control shafts, etc.) to a known earth ground (waterpipe, conduit, etc.), particularly, any exposed metal or conductive part having a return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse plug in the AC outlet and repeat test. ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND CORRECTIVE ACTION MUST BE TAKEN BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER.



AC Leakage Test

Interconnected Equipment AC Leakage Test

Avoid shock hazards. The television instrument, accessory, or cable(s) to which this VideoDisc Player is connected should have the applicable sections of the leakage resistance cold check and the leakage current hot check performed. Do not connect this VideoDisc Player to a TV antenna, cable or accessory that exhibits excessive leakage currents.

Product Safety Notice

Many electrical and mechanical parts in VideoDisc Players have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Data and its Supplements and Bulletins. Electrical components having such features are identified by shading on the schematics and by (*) on the parts list in this Data and its Supplements and Bulletins. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in this Data and its Supplements and Bulletins may create shock, fire or other hazards. Product Safety is continuously under review and new instructions are issued from time to time. For the latest information always consult the current RCA Service Data, Supplements and Bulletins. A subscription to, or additional copies of, RCA Service Data may be obtained at a nominal charge from your RCA Consumer Electronics Distributor or from RCA Technical Publications, 600 North Sherman Drive, Indianapolis, Indiana 46201.

GENERAL INFORMATION

> **NOTE:** Technicians servicing this product will find helpful the following related **RCA** Technical Training Publications:
>
> **VideoDisc Technical Manual SFT1-TM,** and **Workshop Manual SFT1-1.**
>
> These publications may be ordered, for a nominal charge, from: RCA Technical Publications 1-450, 600 N. Sherman Dr., Indianapolis, IN 46201.

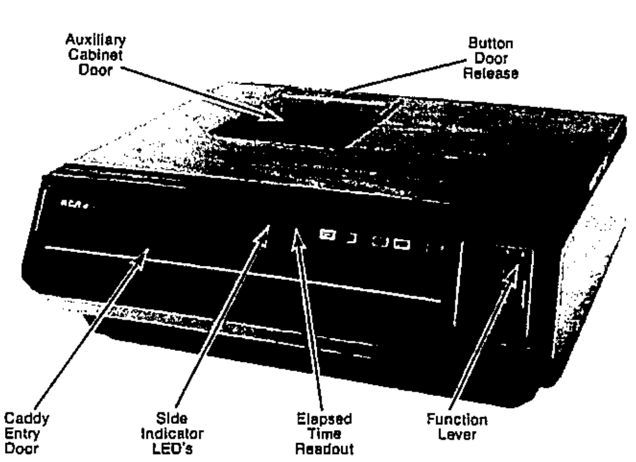
The RCA SelectaVision VideoDisc Player, being a complete new product, has many innovative electronic and mechanical features. The player is simple to operate, and easy to install. External connections to and from the player are minimal, involving only intercept and reconnection of the television VHF antenna input lead (cable). Necessary connecting lead (cable) and matching transformers are included to handle all but unusual installations.

1. A 5 foot, 75 ohm coaxial cable connects from the antenna out connector on the player, to the VHF antenna input on the television receiver. Use cable direct if the television has 75 ohm VHF antenna input connector; use via a 75 to 300 ohm matching transformer/adaptor if the television VHF antenna input is 300 ohm.
2. A 300 to 75 ohm matching transformer/adaptor mates a 300 ohm twin lead antenna system (outside or rabbit ears) to the player 75 ohm antenna input system. (Captive, screw type lugs are integral to the 300 to 75 ohm antenna matching transformer/adaptor; strip and insert the 300 ohm twin lead wires then tighten the screws.) Keep in mind — for different or "odd" antenna systems — the antenna input and output of the VideoDisc Player is 75 ohm unbalanced.

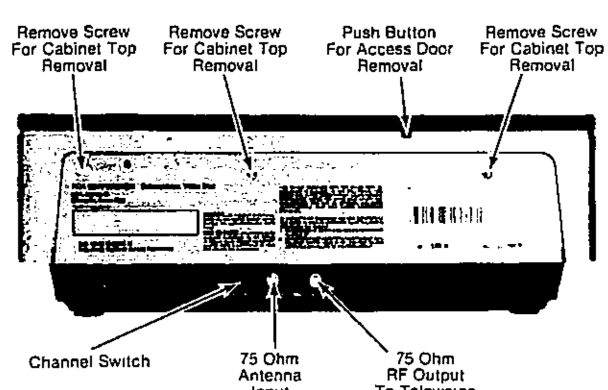
Antenna connection instructions should be carefully followed. The player produces an R-F signal which is transmitted on VHF Channel 3 or 4 (switch selectable) frequency. If the player antenna output is connected to an antenna, directly or in parallel from the television antenna input connections, the player may broadcast a signal. Broadcasting an unauthorized signal could violate certain regulations of the Federal Communications Commission regarding the operation of R-F devices. Recheck the installation to avoid any broadcasting possibilities; make sure the 75 ohm shielded cable is used to connect the R-F output of the player to the television receiver, and that no other connections are paralleled from these terminals.

The physical location of the antenna "in" and "out" connectors are depicted in the rear apron photo of the VideoDisc Player (Fig. 1-1). "F" type connectors accept the VHF antenna input and output cables.

Interface of the antenna system, VideoDisc Player, and monitor television receiver is controlled by an antenna switch on the player. The antenna switch on the player is link connected to the Player Function Switch (Fig. 1-1). When the Player Function Switch is in the "OFF" position, the antenna is connected directly (via the player antenna switch) to the television receiver and the television will operate normally. When the player function switch is in the "Play" or "Load" position, the antenna is disconnected and the player R-F output is connected directly to the television VHF antenna input connector. Under this condition the television receiver will receive a signal only on Channels 3 or 4 (switch selectable on the rear of VideoDisc Player Fig. 1-1). Specifically the VideoDisc Player antenna switch system serves to either connect the antenna system direct to the television VHF antenna input or disconnect the antenna system and connect the VideoDisc Player R-F output direct to the television VHF antenna connector.



(Front View)



(Rear View)

Fig. 1-1. — SFT 100

OPERATING CONTROLS AND FUNCTIONS

Power On/Off

Power is applied to the player by placing the player function switch in either the "Load" or "Play" position. The digital readout indicator is then illuminated. In the play position the readout indicator displays elapsed play time in minutes when a disc is being played. In the load position the readout indicator displays a flashing "L".

Rapid Access Forward

Pressing the Rapid Access "FWD" function button moves the pickup arm assembly forward rapidly (player must be in play mode and disc in place). The readout indicator displays elapsed play time in minutes. The stylus lifter circuit is in operation during this mode therefore the stylus is not in contact with the disc.

Rapid Access Reverse

Pressing the Rapid Access "REV" function button moves the pickup arm assembly to the rear rapidly (player must be in play mode and disc in place). The readout indicator displays elapsed play time in minutes. The stylus lifter circuit is in operation during this mode therefore the stylus is not in contact with the disc.

Visual Search Forward

Pressing the Visual Search "FWD" button permits faster than normal (16 times normal speed) forward movement of the pickup arm assembly. The stylus remains in contact with the disc permitting Visual Search forward (scan) viewing of the program material (audio is muted during this mode of operation).

Visual Search Reverse

Pressing the Visual Search "REV" button permits fast reverse movement (16 times normal speed) of the pickup arm assembly. The stylus remains in contact with the disc permitting Visual Search reverse (scan) viewing of the program material (audio is muted during this mode of operation).

Pause

Pressing the "Pause" button places the stylus lifter circuit into operation raising the stylus off the disc. Video is blanked, audio is muted, and there is no movement of the pickup arm assembly in this mode of operation. The digital readout will display flashing "P". Pressing the "Pause" button a second time returns the player to normal operation.

Load

Place player function lever in "Load" position. Read out indicator will flash "L". Slide disc caddy into player until it latches, then pull caddy sleeve out. The disc and caddy spine will remain in the player. Depending upon which side of disc is up at time of insertion, the corresponding side indicator LED will light. To remove disc and spine from player — place function switch in "Load" position, slide empty caddy sleeve into player until it releases spine catch. Remove loaded caddy from player.

Play

After player is loaded, place function lever in "Play" position. In approximately 8 seconds a picture will appear on the TV screen. The digital readout will display elapsed playing time in minutes. When play is completed (approximately 60 minutes) the digital readout will display flashing "E".

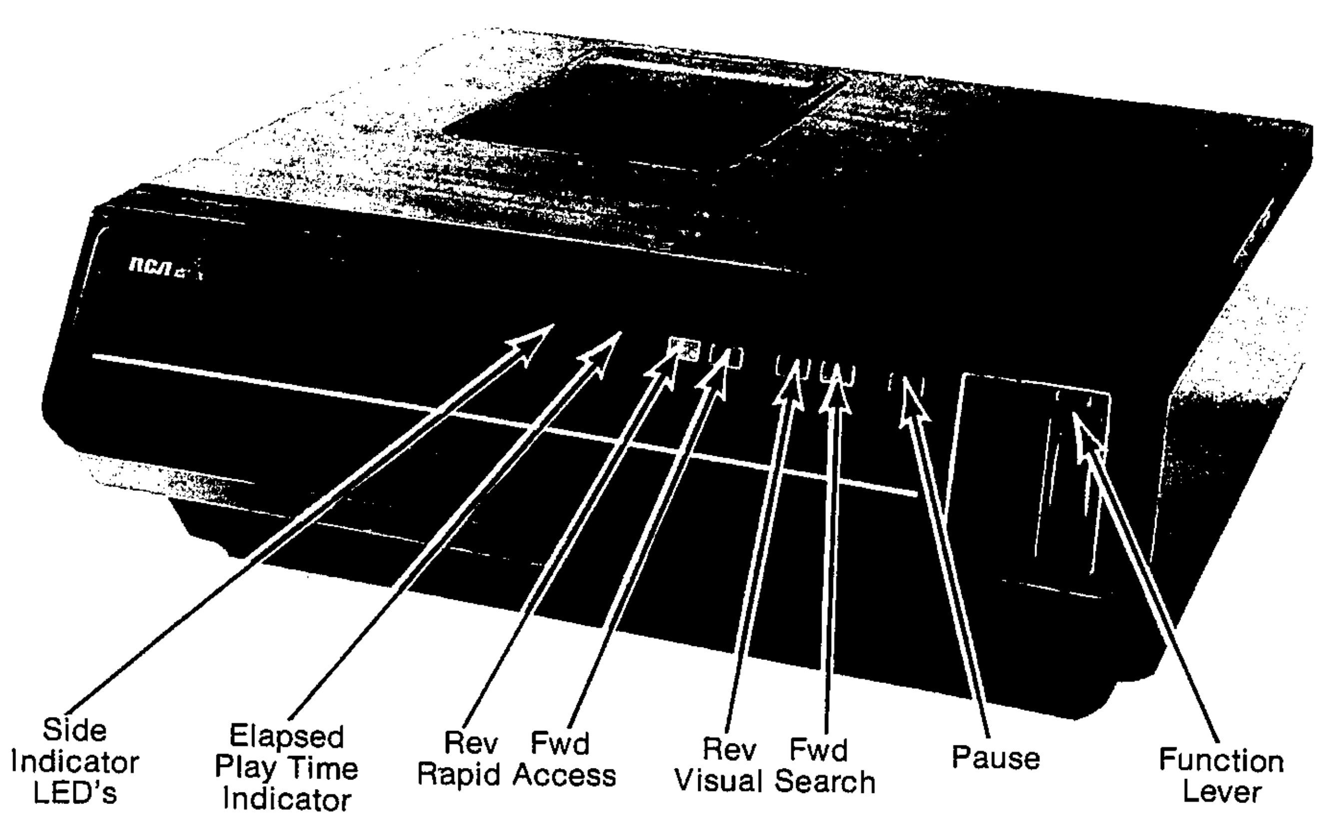


Fig. 1-2. — Operating Controls

ELECTRONIC/MECHANICAL SYSTEMS DESCRIPTION
ELECTRONICS: System Control and Signal Processing

Fig. 1-4 is an electrical systems block diagram of the RCA SFT100 VideoDisc player. Most electronic circuits in the VideoDisc player can be separated into two basic functional categories: SYSTEM CONTROL and SIGNAL PROCESSING.

The system control electronics are on the PW 500 circuit board, which is mounted above the VideoDisc turntable. A microcomputer integrated circuit is the heart of the system control function. The microcomputer receives input commands from the user-operated function switches and, in turn, controls the operation of the player. The system control microcomputer also decodes the **Digital Auxiliary Information** (DAXI) on the VideoDisc to develop the elapsed play time readout and to control forward movement of the pickup arm assembly during the "play" mode.

The signal processing circuits are equipped with several integrated circuits and discrete devices. These are mounted on the PW 3000 circuit board and on the pickup arm assembly. The signal processing circuits detect the video and audio information on the VideoDisc, demodulate it and process it through a comb-filter circuit, and then modulates it onto either a Channel 3 or Channel 4 television RF carrier. This modulated television RF signal is then connected through coaxial cable to any NTSC television receiver.

Functional Operation

Operation of the VideoDisc player is totally controlled by the system control microcomputer. When the user selects an operating mode — **PLAY, RAPID ACCESS FORWARD or REVERSE, VISUAL SEARCH FORWARD or REVERSE, PAUSE, or LOAD** — input commands related to that mode are fed to the microcomputer. The microcomputer decodes these input commands and, in turn, uses the decoded information to "direct" other system control electronics to establish the electrical conditions needed to perform the selected operation mode. The state of all signal processing circuits is controlled by the Not Squelch ($\overline{SQ}$) output of the microcomputer. When the Not Squelch line goes to a logic "Lo" state, all of the signal-processing electronic circuits are disabled (squelched).

The system control microcomputer also has direct control over the pickup arm assembly. This involves: — the servo motor operation, moving the arm forward (toward center of disc) during normal play; — the stylus lifter operation, raising and lowering the stylus as the various functions are initiated; — and the stylus kicker circuits, enabling the system to provide the VISUAL SEARCH feature. The microcomputer also controls the direction of the servo system. In the RAPID ACCESS REVERSE, and VISUAL SEARCH REVERSE operating modes, the microcomputer instructs the servo system to operate in the reverse mode.

The system control microcomputer also generates the elapsed play time display. The time display information is developed from a Digital Auxiliary Information (DAXI) signal. This signal is prerecorded on the VideoDisc on line 17 of each vertical field. The DAXI signal includes a field identification number that is decoded by the system control microcomputer. This decoded information is used by the microcomputer to develop the elapsed time display. The DAXI code is not present in the RAPID ACCESS FORWARD and REVERSE operating modes because the stylus is lifted from the disc. Therefore, during these two modes of operation the time display must be artifically maintained so that the approximate elapsed time of the program material can be tracked while the stylus is lifted and the arm is moved in either direction across the disc. This is accomplished by a "photo interrupter" circuit. This circuit computes the approximate elapsed time by tracking the position of the arm relative to the disc radius.

The signal processing electronics on the pickup arm assembly detect information recorded on the VideoDisc. The arm also contains components for providing the features of VISUAL SEARCH FORWARD and REVERSE as well as Locked Groove protection. They are: the "stylus kicker" coils which will cause the stylus to skip two grooves of the VideoDisc; the "armstretcher" transducer which corrects for timebase variations in the recovered chrominance and luminance signals.

The primary function of the pickup arm signal-processing electronics is to detect the information recorded on the VideoDisc. This is accomplished by modulating a 910-MHz UHF resonator circuit with the capacitance changes on the VideoDisc surface. The variations in capacitance on the VideoDisc surface causes the 910-MHz resonator center frequency to be modulated. This, in turn, amplitude modulates a fixed 915-MHz oscillator signal. This signal is then peak detected, with the resultant signal representing the capacitance variations on the VideoDisc. The signal is then preamplified and AFT controlled before being applied to the remaining signal processing electronics. The Arm Output (AO) signal contains the video and audio FM-modulated carrier information and all of the information necessary for player control.

The AO signal is fed to the system control electronics (PW 500 board) and to the signal processing electronics (PW 3000 board).

On the signal processing electronics board the AO signal is applied to two FM demodulator ICs, one for audio and the other for video. The audio demodulator IC converts the AO signal audio carrier information into a discrete audio signal. The audio signal is fed to the sound modulator, which frequency modulates a 4.5-MHz sound carrier that is fed to the RF Modulator IC.

The audio demodulator IC also contains a Defect Detector circuit. This circuit prevents audio noise if the audio carrier of the AO signal is momentarily interrupted by microscopic debris on the disc surface.

Before the AO signal is applied to the Video Demodulator IC, it is passed through a NonLinear Aperture Correction (NLAC) circuit. The NLAC circuit removes the 716 kHz audio modulation from the video information. It does this by phase inverting the audio modulation, and then adding it back to the original signal. This cancels out the audio modulation in the carrier information.

The video FM carrier, with the audio modulation removed is applied to the Video Demodulator IC which demodulates the video carrier. The video demodulator also contains a defect detection circuit, which allows a portion of the previous horizontal line to be inserted when a defect caused by loss of carrier occurs.

The output of the video demodulator, being composite video with "buried" subcarrier chroma, is then applied to a comb-filter circuit. The comb filter dynamically separates chrominance and luminance information from the composite video information.

The output of the comb filter is "combed" chrominance and "combed" luminance. The combed chrominance output signal contains low frequency luminance information and the DAXI signal which is transmitted with each vertical field. After bandpassing the 1 to 2 MHz chroma signal, the two remaining signals (low frequency luminance and DAXI) are separated by low pass filters. The low frequency luminance information is recombined with the "combed" luminance information to provide the luminance output. Vertical Detail Output (VDO) containing the DAXI signal is supplied via the DAXI buffer IC to the system control microcomputer.

The luminance and chrominance information is coupled from the comb-filter circuit to the video converter circuit. The video converter up-converts the 1.53-MHz chrominance information to 3.58-MHz. The 3.58-MHz chroma and the luminance information are then combined. The composite video signal is then supplied to the RF modulator where the audio FM carrier is added and a RF signal on Channel 3 or Channel 4 is developed for output to a standard NTSC television receiver.

Also developed in the video converter stage is the drive signal for the "armstretcher" time base corrector circuit. The correction signal is developed by comparing the up-converted 3.58-MHz chroma information with a crystal controlled 3.58MHz reference oscillator. Any phase or frequency difference between the two

ELECTRONIC/MECHANICAL SYSTEMS DESCRIPTION (continued)

signals develops an error signal which is applied to the armstretcher circuit. This circuit operates a solenoid (located on the pickup arm assembly) moving the stylus (laterally with respect to the disc) to maintain a constant disc to stylus velocity. The armstretcher circuit output is also coupled to the converter oscillator (5.11 MHz VCXO) in order to maintain phase lock between the upconverted 3.58 MHz color signal and the crystal controlled 3.58-MHz reference oscillator.

AC and DC Power Supplies

All the electronic circuits in the SFT100 VideoDisc player are isolated from the power line, i.e. cold ground. Referring to Figure 1-3, the AC input is applied to the PW AC IN circuit board. Intitial protection is provided by a 1-Amp fuse (F1). The AC power switch, S2, is controlled by the function lever. AC power is applied to power transformer, T1, when the function switch is in the "Load" or "Play" position. Power transformer, T1, is protected by F2, a 1/4-Amp fuse.

The secondary of T1 contains two windings — one developing nine volts RMS utilized to generate a 5-volt regulated supply, the other developing 18 volts RMS providing a 22-volt unregulated DC supply.

AC power from S2 is also applied to AC Play Switch, S4. The AC play switch is controlled by the function lever and is closed only in the PLAY position. The AC play switch is open in the "load" and "OFF" positions.

AC Play switch, S4, connects to the AC Spine Sense switch, S8, in series with the turntable motor. The AC spine sense switch is activated only with a spine and disc in the player. The closing of AC power switch (S2), AC play switch (S4), and AC spine sense switch (S8) applies power to the turntable motor (i.e. all three switches must be activated before the turntable motor will function).

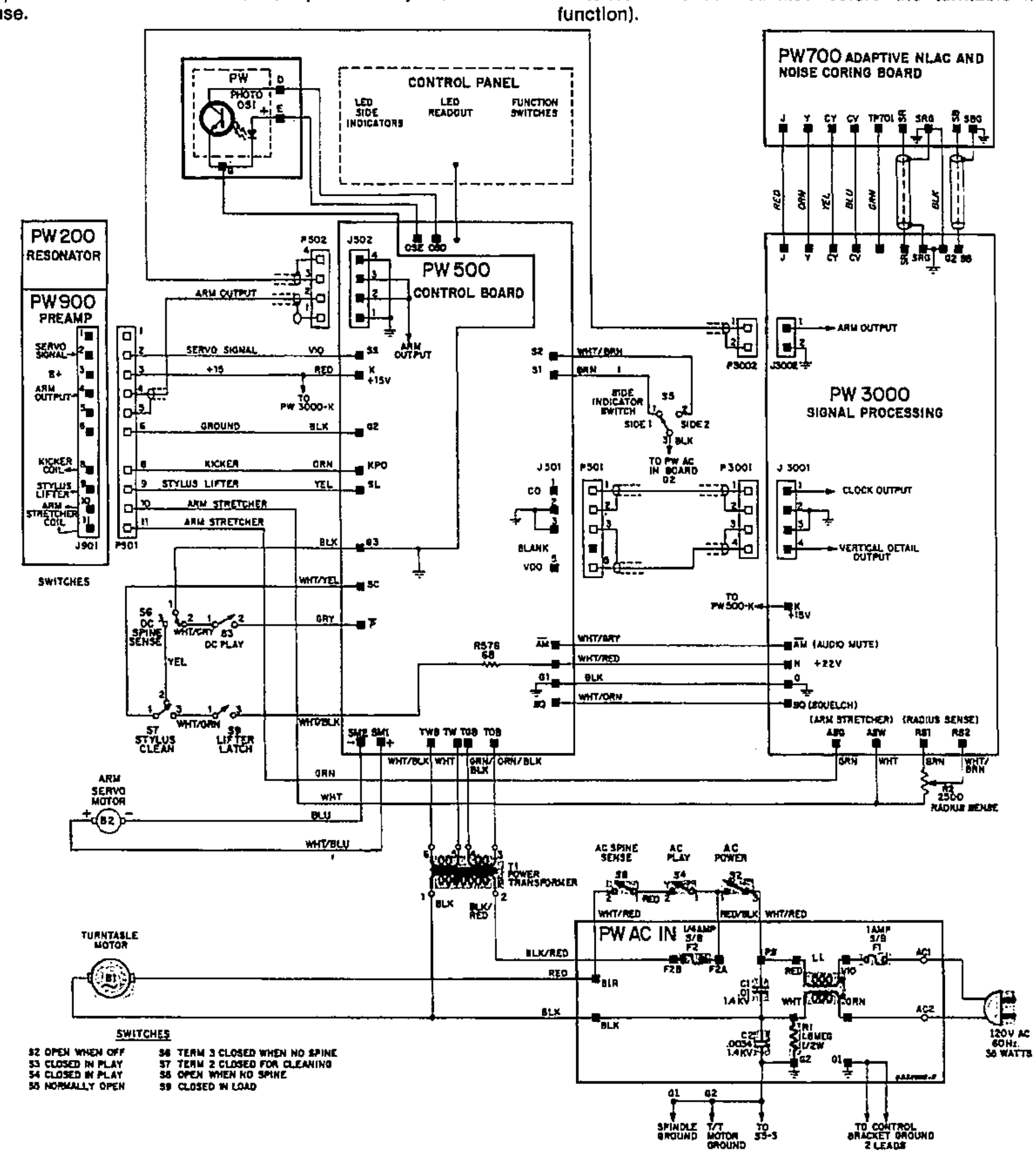


Fig. 1-3. — Overall System Wiring Diagram

SERVICING PRECAUTIONS

General

The Solid State devices utilized by this player are selected to perform efficiently in their specific circuit function.

Order replacement items by stock number from your Authorized RCA Distributor.

General precautions to observe when servicing this player follows. More specific information is outlined under those special sections associated with this instrument.

1. When servicing this instrument always use an isolation transformer.
2. Do not remove or insert any component with AC power applied to this instrument.
3. Do not bridge electrolytic capacitors with AC power applied to player since resultant surges may damage the solid state devices.
4. When a solid state device is equipped with a heatsink, do not operate the instrument with that heatsink removed.
5. Soldering irons utilized where transistors and integrated circuits are concerned should be rated at no more than 35 watts. They should be grounded in such a manner that no voltage will be applied to the device during the soldering or desoldering operation. These precautions are necessary to prevent any possible damage to the device due to excessive heat and/or voltage.
6. Do not use spray type chemicals (especially circuit coolants) as trouble-shooting aids in the vicinity of component connectors.

To Clean Connector Contacts apply the following described mixture.

Use a mixture of 10% (by volume) Acetone and 90% (by volume) isopropyl Alcohol (strength of 90 to 99%).

Use a pipe cleaner soaked with the above solution to clean plug contacts. Further lubrication of contacts is not required.

7. Always connect the ground lead of a test instrument to the ground point before connecting the positive lead: conversely, always remove the ground lead of a test instrument last.

Handling Integrated Circuits

Thoughtful handling procedures and some inexpensive equipment can go a long way towards reducing static electricity damage to integrated circuits. Basic principles include steps to prevent the frequent discharging of static electricity from the human body (and other objects) and avoiding the use of static producing accessories. The following procedures are effective in reducing the possibility of integrated circuit damage due to static electricity:

1. Just before touching any component or circuit board, touch the metal chassis (observe line isolation precautions) to ensure your body is not statically charged.
2. When removing circuit boards from the instrument, place them on a conductive surface such as aluminum foil. Do not place them directly on the floor, carpet or workbench.
3. Touch the metal chassis (observe line isolation precautions) just before picking up a circuit board or component for insertion.
4. When removing or replacing integrated circuits, grounded-tip solder irons are absolutely essential.
5. Some "solder suckers" generate up to 20,000 volts of charge when triggered and should not be used. Even when the IC being removed is known to be bad, a solder sucker can generate enough static to damage other components on the board. Anti-static solder suckers are available and are essential for IC work.
6. Replacement integrated circuits are packaged in conductive foam or with aluminum foil. Do not remove the IC from its protective package until it is ready to be used. Just before removing the IC, touch the conductive foam to the chassis or circuit board into which it will be inserted. This can be done by touching the board with one hand and the conductive package with the other.
7. Try to minimize motion when handling unpackaged integrated circuits. When seated, the simple action of lifting your feet from the floor can generate static electricity. Clothes readily generate static electricity when brushed against other objects.
8. Do not use freon propelled sprays on the circuit boards or chassis. Freon sprays can generate more than 5,000 volts of static electricity. Even when an IC is in a protective package or soldered into a circuit board, a freon propelled spray can generate static electricity which could damage internal components not directly connected to the IC pins. A short bristle brush (1/2 inch or 1.25 centimeters) with a metal handle is a safer method of clearing debris.

NOTE: In situations where the above guidelines are in conflict with safe servicing procedures, the safety rules come first.

Printed Circuit Board Soldering Rules — General

1. Use a low-wattage soldering iron rated at no more than 35 watts.
2. Keep the soldering iron tip well-tinned and clean at all times.
3. Keep the surface to be soldered clean.
4. To unsolder, heat the component leads until the solder melts.

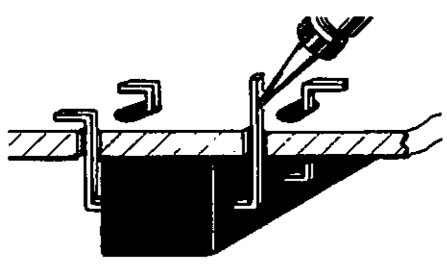
   Draw solder away from the component joints using a grounded solder sucker, solder braid or gravity method. Do not overheat the circuit board printed foil.
5. To resolder, heat the component lead first to melt the solder; then hold the iron to the junction of the component lead and the printed circuit foil until the solder blends. Do not overheat.
6. Inspect the serviced area and remove excess or splashed solder.

SERVICING PRECAUTIONS (Continued)

Integrated Circuit Replacement

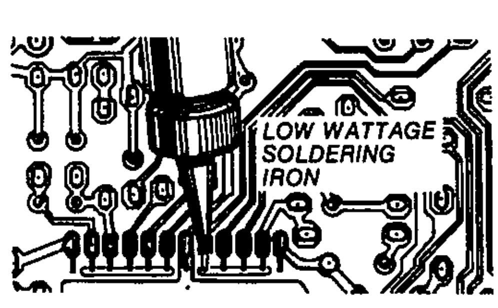
RCA VideoDisc Play Circuit Boards use slotted IC mounting holes (in some applications). The IC leads are bent flat against the board to provide a good mechanical contact to the circuit-board connecting pads. To achieve best replacement results, the following procedure should be used:

1. Using a Weller WP 25 with an ST-5 tip or similar soldering iron, desolder and straighten IC pin leads in one operation. Because of the shape of the ST-5 tip, it can be used to pry the lead upright while melting the solder as shown.



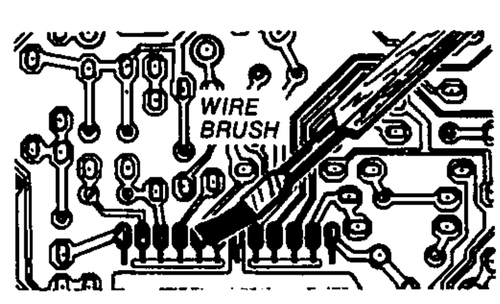
Use Soldering Iron Tip To Pry Leads

2. Use a solder sucker or wicking technique to remove any excess solder from the circuit-board pads before removing the IC.



IC Removal

3. Insert new IC. Bend pin leads over against the appropriate copper pads and carefully solder each lead. Observe IC handling procedures outlined on preceeding page.



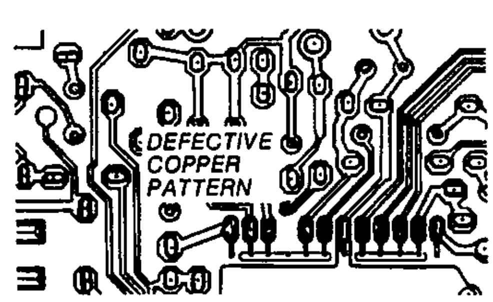
Clean Area With Brush

4. After replacing an IC, clean the surrounding board area with a small wire brush, e.g. GC Electronics #9494. This will remove small solder droplets which are held in the melted acrylic coating (when coating is utilized). It is **not** necessary to reapply acrylic coating after servicing.

Circuit Board Repair

Excessive heat applied to the copper pattern of any circuit board will cause the pattern to lose adhesive bonding to the board. When this happens, the copper becomes separated or "lifted". There are many commercially available methods for repairing such defects. In the event printed circuit damage is evident (copper pattern broken, lifted, etc.) the following procedures are recommended for circuit board repair.

NOTE: The **PW AC IN** circuit board should only be repaired by the method "defective" copper at other connections" see Page 1-19.

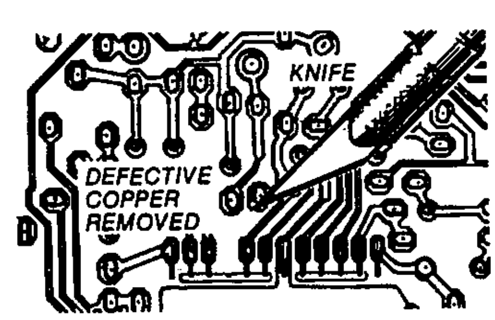


Defective Copper Pattern

Defective Copper at an IC Connection

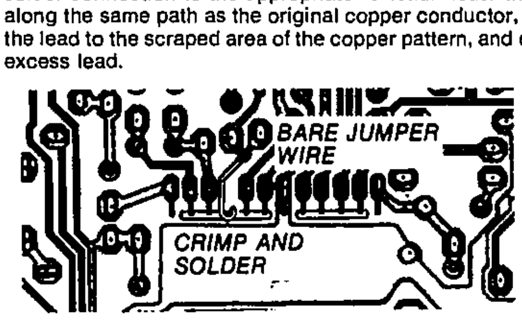
To repair defective copper at an IC connection pad, the following procedure for installing a copper-side jumper wire should be used. Use this method only at IC connections.

1. Using a sharp knife, carefully remove the damaged copper. (Remove no more than necessary.)



Remove Defective Copper

2. Carefully scratch the solder resist and acrylic coating (when coating is utilized) from the end of the cut conductor.
3. Using small-gauge bare hook-up wire, make a crimp and solder connection to the appropriate IC lead. Route the lead along the same path as the original copper conductor, solder the lead to the scraped area of the copper pattern, and clip off excess lead.



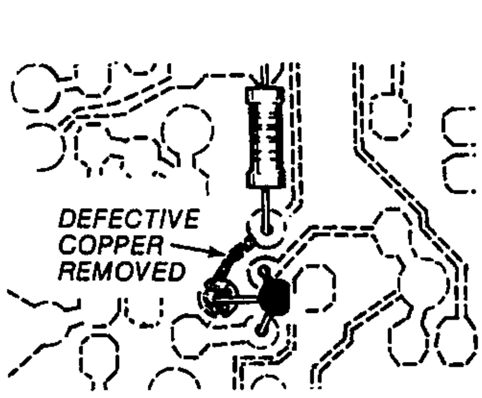
Install Jumper Wire and Solder

SERVICING PRECAUTIONS
(Continued)

Defective Copper at Other Connections

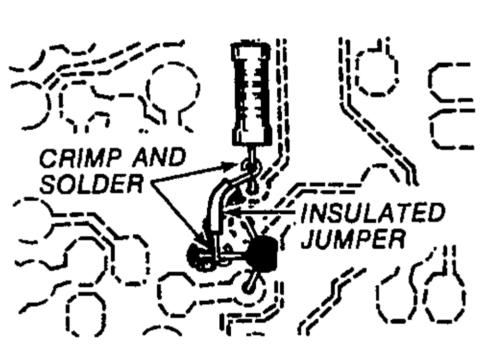
For repairing defective copper at other connections, the following procedures for installing an above-the-board insulated jumper wire should be used. When using this method, always remove at least 1/4-inch of the defective copper. This prevents a hazardous condition from existing if the jumper wire were to open.

1. Remove the defective copper using a sharp knife. Remove at least 1/4-inch length.



Remove At Least 1/4" Copper

2. Trace the copper conductor paths and locate the nearest component that is connected to the same copper pad. Connect insulated hook-up wire (20 gauge) between this point and the component lead at the other side of the defective copper pad (to bridge the cut copper). Use good crimp and solder connections. The insulated hook-up wire should be dressed so that it does not touch hot resistors, other components, or sharp edges.



Insulated Jumper Installed

Fuse and Resistor Replacement

1. Clip fuse or resistor lead at top of hollow stake.

2. Install replacement part by crimping lead securely around notch at top of stake, then solder securely.

Note: It is very **important** that the crimp be mechanically secure. When replacing **power resistors** by this method, it is important to position replacement part(s) as close to the original position as possible. This will prevent excessive temperature stress to adjacent components.

Diode Replacement

1. Remove defective part by clipping leads as close to part body as possible, then bend remaining leads perpendicular to board.

2. Observing polarity, wrap lead of new diode around original lead, crimp securely and solder.

3. Inspect original solder joint on copper side of circuit board. If this connection is not bright and shiny, it should be reheated and additional solder applied.

"Small-Signal" Transistor Replacement

1. Remove defective transistor by clipping leads as close as possible to the part body. Flush-cut pliers are ideal for this.

2. Using fine point needle-nose pliers, bend the end of all three remaining leads into a "U" shape.

3. Bend the ends of the replacement transistor leads in the same manner as in Step 2.

4. Connect the leads of the replacement transistor to the leads of the original transistor and crimp securely. Solder these connections.

Power Transistor Replacement

To ensure safe and reliable operation of this player, it is necessary to install power transistors directly in the board rather than using the "small-signal" transistor replacement technique. This requires desoldering the lead connections through the acrylic coating (when used) on the board. For best results, the following procedure should be followed:

1. Remove all solder from around transistor leads using either a solder sucker or wicking technique.

2. After removing heatsink mounting screw the transistor should be carefully removed.

3. Insert new transistor in circuit board and install heatsink mounting screw. Solder each lead securely and clip off excess lead length.

Safety Precautions

Before returning any instrument to the customer a safety check of the entire instrument should be made. The service technician must be sure that no protective device built into the instrument by the manufacturer has become defective or defeated during servicing.

SERVICE TEST DISC CONTENT vs. SERVICE APPLICATION

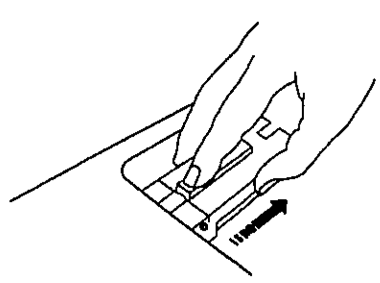
SEGMENT	VIDEO SIGNAL	AUDIO SIGNAL	SERVICE APPLICATION
A	Color bars w/time count	480 Hz 100% Modulation	Landing Adjust
B	Uniform Matrix, Red Field	480 Hz 100% Modulation	Visual Search Check FWD/REV
C	Uniform Matrix, Blue Field	480 Hz 100% Modulation	Check operation of microprocessor (DAXI omitted)
D	Color Bars	Unmodulated	General check picture quality
E	100 IRE, White Field	480 Hz 100% Modulation	General check picture quality
F	SMPTE	Unmodulated	General check picture quality
G	120 IRE, White Field	Unmodulated	Modulation Depth Adjust
H	5 Step Linearity w/Defect	Unmodulated	Defect Substitution Level Adjust
I*	Unmodulated * (5 MHz Carrier Only)	10 kHz 100% Modulation	5.11 MHz VCO Frequency Adjust
J	Demonstration	Demonstration	General Picture Quality Check
K	20 IRE, Grey Field	No Carriers	Sound Beat Check
L	20 IRE, Grey Field	480 Hz 100% Modulation	Sound Beat Check
M	20 IRE, Grey Field	480 Hz 100% Modulation	Sound Beat Check
N	20 IRE, Grey Field	Unmodulated	Sound Beat Check
O	20 IRE, Grey Field	480 Hz 100% Modulation	Sound Beat Check
P	Uniform Motion, Red Field	480 Hz 100% Modulation	Visual Search Check
Q	Color Bars (10 Sec.)	480 Hz 100% Modulation	DAXI Signal Check
R	End	End	DAXI Signal Check
S	Color Bars w/Time Count	480 Hz 100% Modulation	Arm Stretcher Check/ Adjust

INSTRUMENT SHIPPING

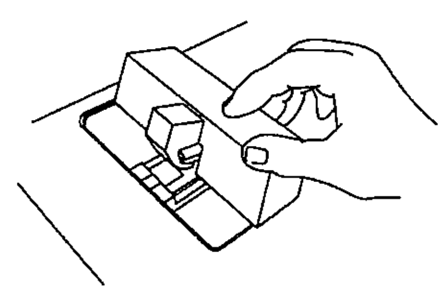
The customer instruction book advises the customer to retain the arm assembly packing block, original carton and packing for use should they need to repack the instrument for moving or shipping.

To reinstall the packing block for moving or shipping:

1. Disconnect player from AC outlet and remove antenna connections.
2. Press access cover release button on back of player. Rear edge of cover will pop up. Remove access door. Arm assembly will now be visible.
3. Place function lever in "load" position.
4. Grasp arm assembly as close as possible to center of player and position arm assembly in center of access door opening.
5. Open hinged cartridge cover by sliding latch in direction of arrow (see illustration).
6. Replace packing block (see illustration).
7. Repack player in original carton for shipment using original packing material.
8. Be certain to include instrument accessories (antenna hook-up cable and adaptors) if instrument is being returned for service.



Hinged Cartridge Cover



Packing Block

PREPARING THE PLAYER FOR OUT-OF-CARTON TRANSPORT

When transporting player out of original packing material, the following guidelines are recommended:

1. Remove antenna connection. Remove AC cord from power source.
2. Remove access door.
3. Place function lever in "Load" position.
4. Grasp arm assembly as close as possible to center of player and position arm assembly as far to the rear (outermost position) as possible without exerting more than moderate pressure.
5. Place function lever in "OFF" position (this engages the clutch, locking arm assembly in place).
6. Replace access door. Player is now ready to be transported.

INSTRUMENT DISASSEMBLY

Stylus Cartridge Removal

1. Press auxiliary door release button at rear of player (Fig. 1-1), auxiliary door will pop up for removal (Player function lever must be in "off" position).
2. With pickup arm in its outermost position (to the rear as far as possible) — open stylus cartridge retaining lid and remove stylus cartridge by lifting it straight up and out of pickup arm assembly (Fig. 2-1). Carefully handle cartridge by grasping sides! **Do Not** touch stylus.

To replace stylus cartridge reverse procedure.

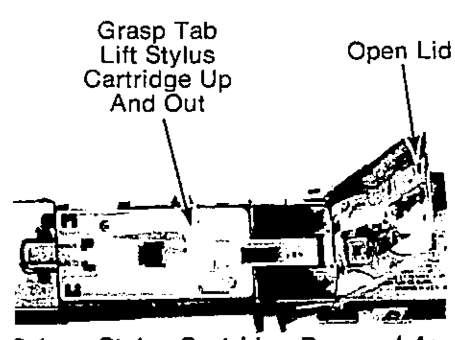


Fig. 2-1. — Stylus Cartridge Removal Access

Top Cover Removal

1. Place player, bottom up, on a soft surface.
2. Remove 8 each 1/4" hex head screws (Fig. 2-2) around outer edge of cabinet bottom.
3. Carefully turn player over, top up and remove 3 each — phillips head screws from rear of cabinet top (Fig. 1-1).
4. Remove top cover — lift up and forward slightly so as to clear function lever, cover should then be clear to lift straight up and off player.

To reassemble reverse procedure.

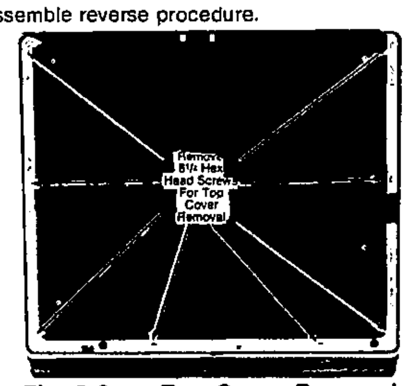


Fig. 2-2. — Top Cover Removal

Bottom Cover Removal

1. With top cover removed — place player (bottom up) on a soft surface.
2. Remove 4 each phillips head screws (Figure 2-3).
3. Remove cabinet bottom — lift front slightly and move cabinet bottom to rear slightly so as to clear antenna "F" connectors and channel switch before removing cabinet bottom completely.

To reassemble reverse procedure.

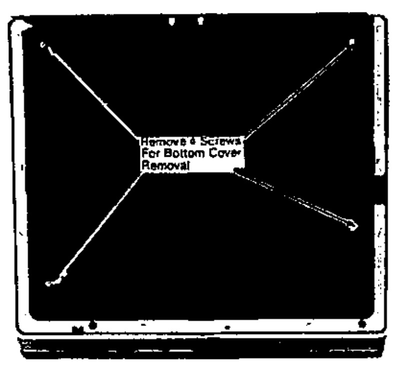


Fig. 2-3. — Bottom Cover Removal

Pick-up Arm Assembly Removal

1. Remove stylus cartridge and set aside to avoid possible damage to stylus.
2. Place function lever in "Load" position and push pick-up arm assembly to rear of player as far as possible and remove P901.
3. Remove 2 each 1/4" hex head screws and remove landing latch assembly as a complete assembly (Figure 2-4).
4. Remove 4 each 1/4" hex head screws (2 on either side of PW500) and remove PW500 cricuit board assembly from player and lay over to right side.
5. Loosen 1/4" hex head screw at front end of pick-up arm carriage shaft.
6. Lift up on right side of pick-up arm assembly remove pick-up arm carriage shaft from front retaining area by sliding it to the rear slightly. Move pick-arm assembly to the right slightly to free roller (on left side of pick-up arm assembly) from rail cap. Remove arm assembly from player.

   To reassemble reverse procedure.
7. See Radius Sensor adjustment page 3-12.



Fig. 2-4. — Pick-up Arm Assembly Removal

INSTRUMENT DISASSEMBLY
(continued)

Transducer Assembly Removal

1. Remove 2 each phillips head screws from either side of transducer assembly cover and remove cover (Fig. 2-5).

2. Remove transducer actuating spring (item 103) by compressing and lifting out of arm.

3. Unsolder and remove transducer leads. Slide transducer out to left of arm assembly. Lift up on end of transducer to clear arm housing and remove transducer from arm assembly.

   To reassemble reverse procedure.

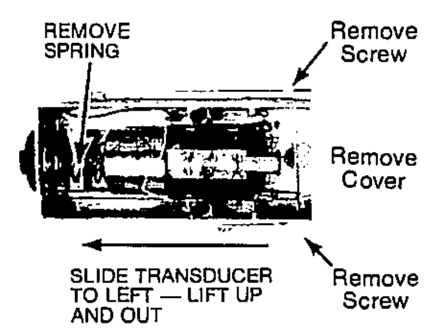


Fig. 2-5. — Transducer Removal

Turntable Removal

With cabinet top removed and PW 500 circuit board assembly laid to right side of player proceed to remove turntable in the following manner (Fig. 2-6).

1. Remove front receiver hold down pad (item 81) by first removing "C" clip retainer (item 68). Slide hold down pad to left to free right end, then lift up on right side and slide pad back to the right to free the left end — remove pad from player.

2. Remove 2 each phillips flat head screws (item 30) holding turntable yoke assembly (item 28) in position.

3. Remove yoke assembly (item 28), spindle cap (item 26), spindle cap washer (item 27), and spindle shaft spring (item 29).

4. Lift turntable (item 1) up and remove from player. Care is required in this procedure because the turntable drive belt (item 39) will want to lift up with the turntable.

   To reassemble reverse procedure.

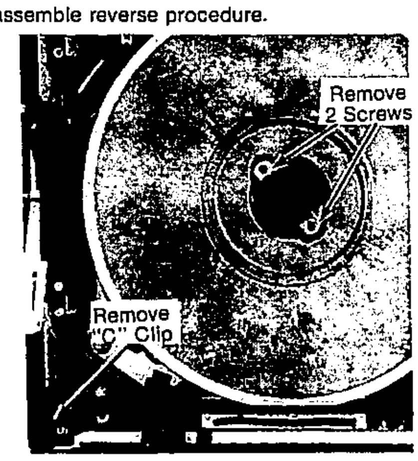


Fig. 2-6. — Turntable Assembly

Note: When reassembling turntable be certain drive belt is positioned correctly around lower outer edge of turntable and turntable drive motor pulley. Also be certain the drive belt is positioned correctly in the Belt Guide (item 6) located on the turntable drive motor assembly (B1).

Turntable Drive Motor Removal

With top cover, pick-up arm assembly, and turntable removed.

1. Remove 3 each hex head screws (Fig. 2-7).

2. Disconnect drive motor assembly (B1) wires from PW AC IN circuit board assembly.

3. Lift drive motor assembly (B1) up and out of centerplate. To reassemble reverse procedure.

NOTE: Spring and washer located under motor mount plate DO NOT LOSE. When replacing motor see Motor Speed Adjust page 3-3.

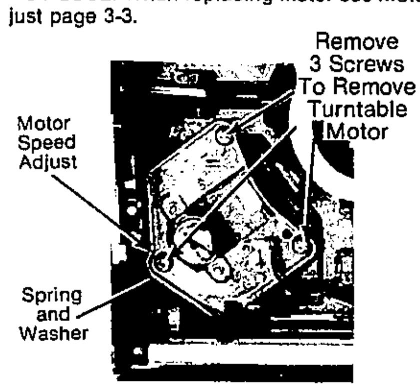


Fig. 2-7. — Turntable Drive Motor Removal

Reduction Gear Assembly Removal

With Pick-Up Arm Assembly removed:

1. Unsolder and remove servo drive motor wires (Fig. 2-8).

2. Remove declutch link from Reduction gear Assembly by first removing "C" clip retainer (item 68).

3. Remove 2 each 1/4" hex head screws at rear of reduction gear assembly. Loosen 2 each 1/4" hex head screws at front of reduction gear assembly.

4. Slide reduction gear assembly to the rear and remove from center plate.
   To reassemble reverse procedure.

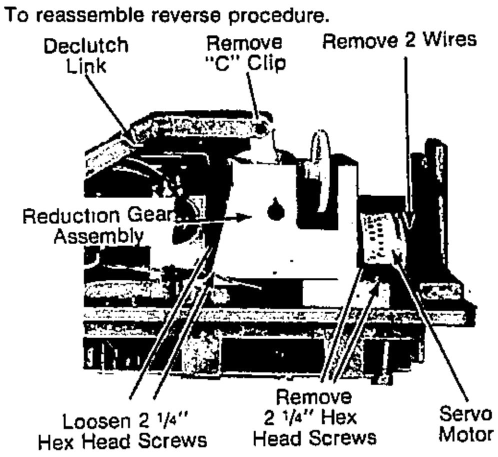


Fig. 2-8. — Reduction Gear Assembly Removal

INSTRUMENT DISASSEMBLY (continued)

Reduction Gear Assembly Disassembly

With reduction gear assembly removed from centerplate (Fig. 2-9):

1. Remove 2 each "C" clip retainers (item 111) from front of reduction gear shaft (item 107) Date Code 8115 and later.
2. Remove 3 each phillips head screws (1 in front, 2 in rear) from assembly.
3. Separate front and rear halves (items 104 and 105) of reduction gear assembly and remove clutch assembly (item 106) and reduction gear (item 107).
4. Remove servo drive belt (item 109).
5. Remove pinion gear retainer (item 110) and pinion gear (item 108).
6. Remove 2 each 3/16" hex head screws and servo motor (B2).

To reassemble reverse procedure.

Note: Add .030 flat washers to reduction gear shaft (Item 107), as necessary, to reduce end play (prior to Date Code 8115 only).

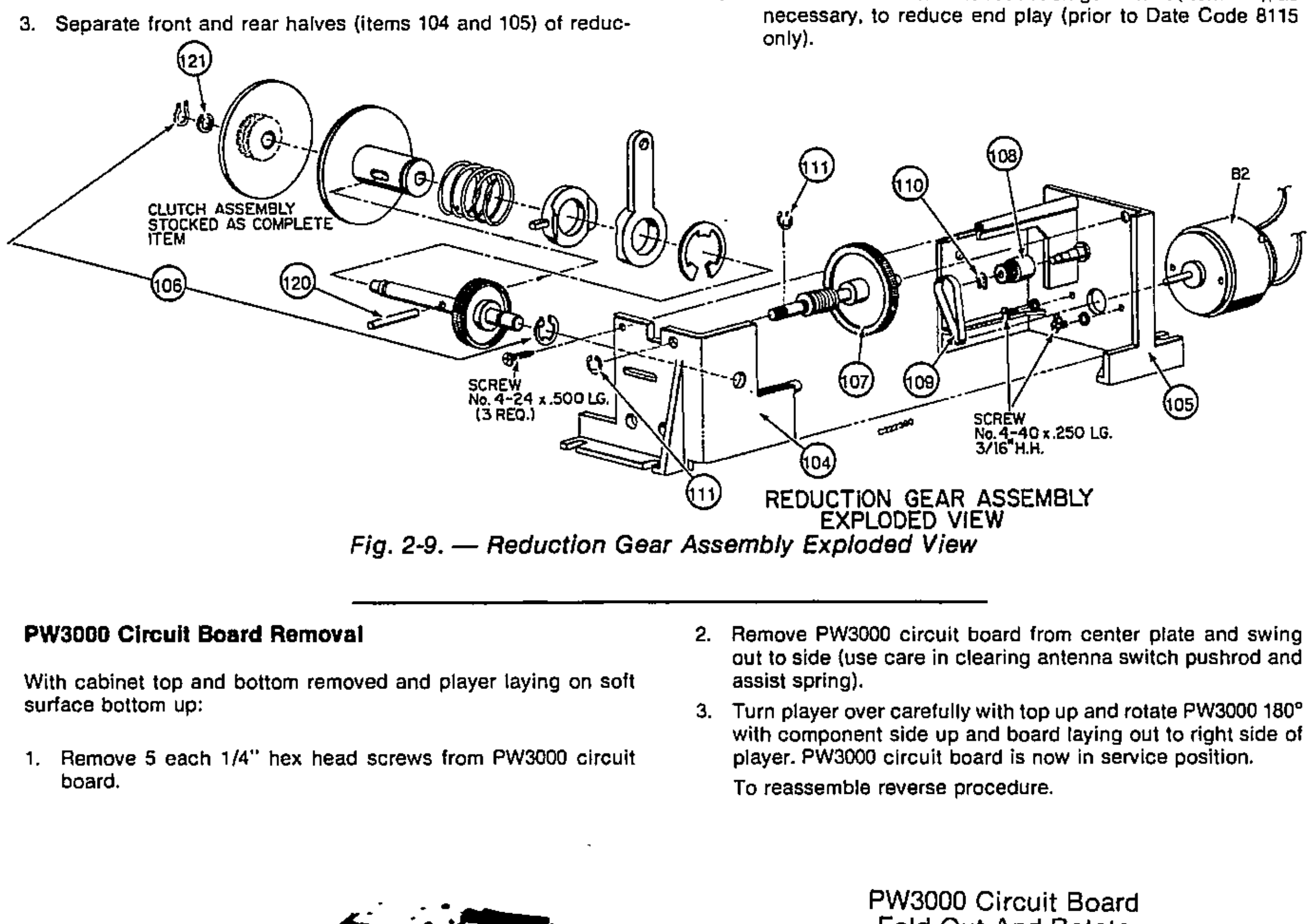


Fig. 2-9. — Reduction Gear Assembly Exploded View

PW3000 Circuit Board Removal

With cabinet top and bottom removed and player laying on soft surface bottom up:

1. Remove 5 each 1/4" hex head screws from PW3000 circuit board.
2. Remove PW3000 circuit board from center plate and swing out to side (use care in clearing antenna switch pushrod and assist spring).
3. Turn player over carefully with top up and rotate PW3000 180° with component side up and board laying out to right side of player. PW3000 circuit board is now in service position.

To reassemble reverse procedure.

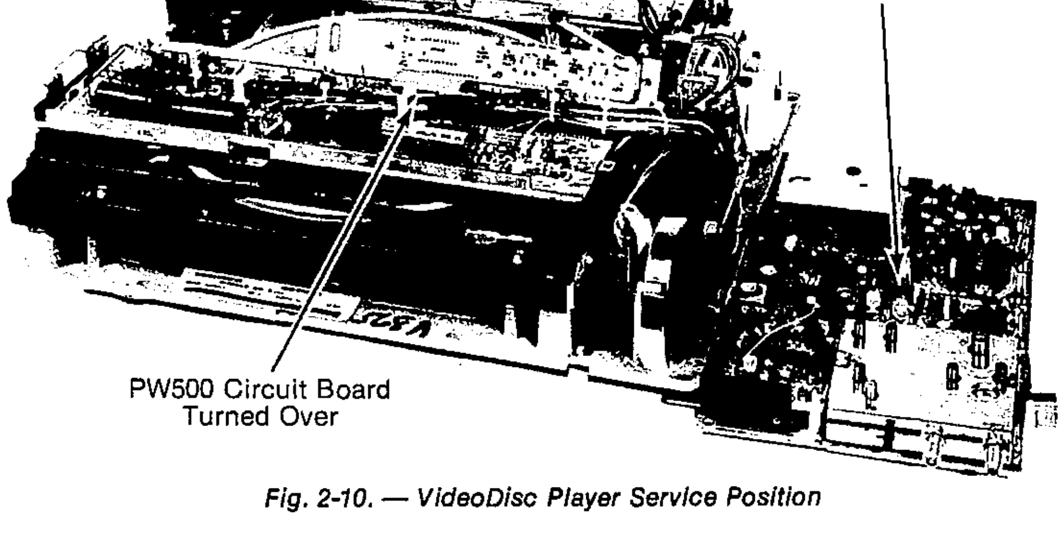


Fig. 2-10. — VideoDisc Player Service Position

INSTRUMENT DISASSEMBLY
(continued)

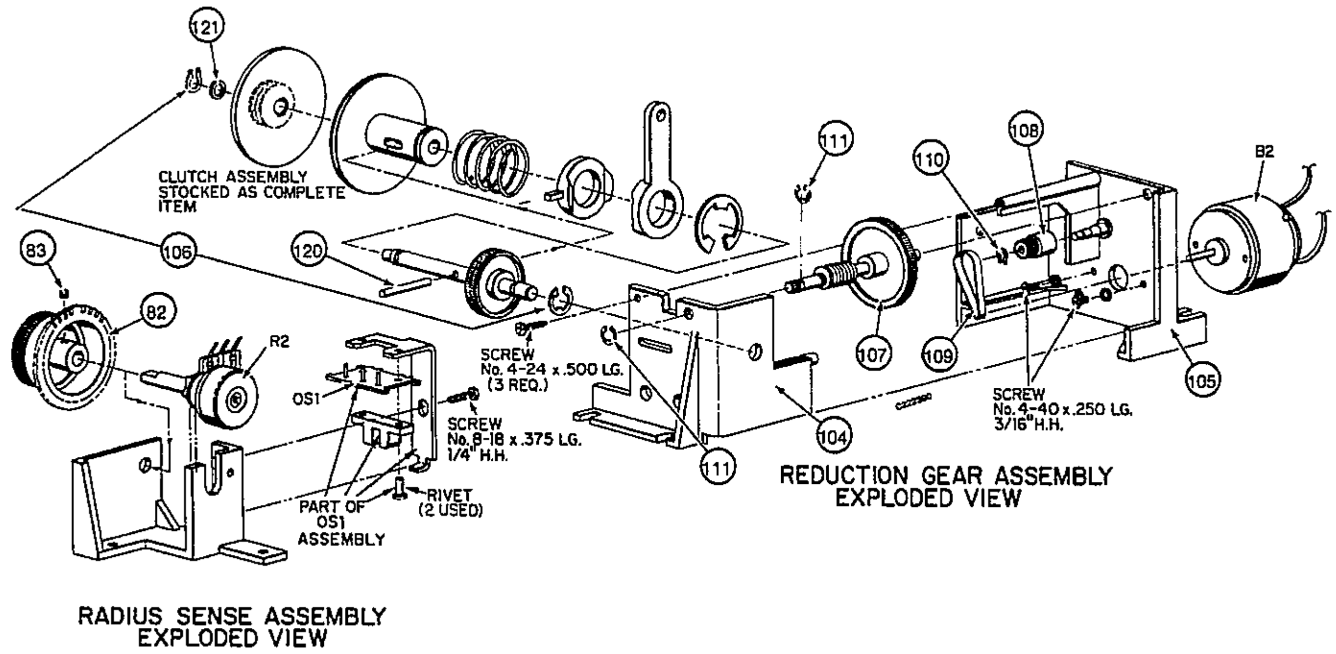


Fig. 2-11. — Radius Sensor And Reduction Gear Assembly Exploded View (Data Code 8115 and Later)

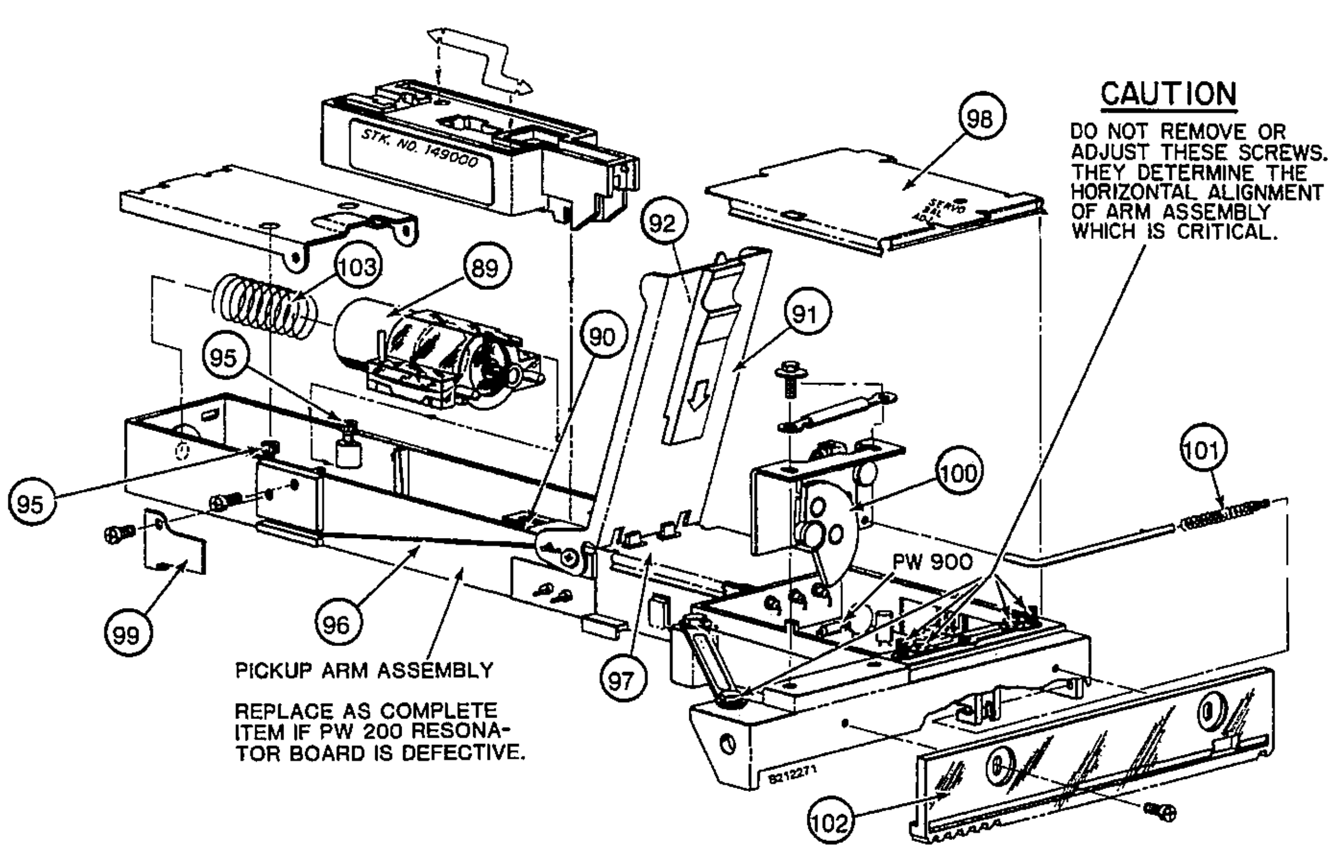


Fig. 2-12. — Pick-up Assembly Exploded View

INSTRUMENT DISASSEMBLY (continued)

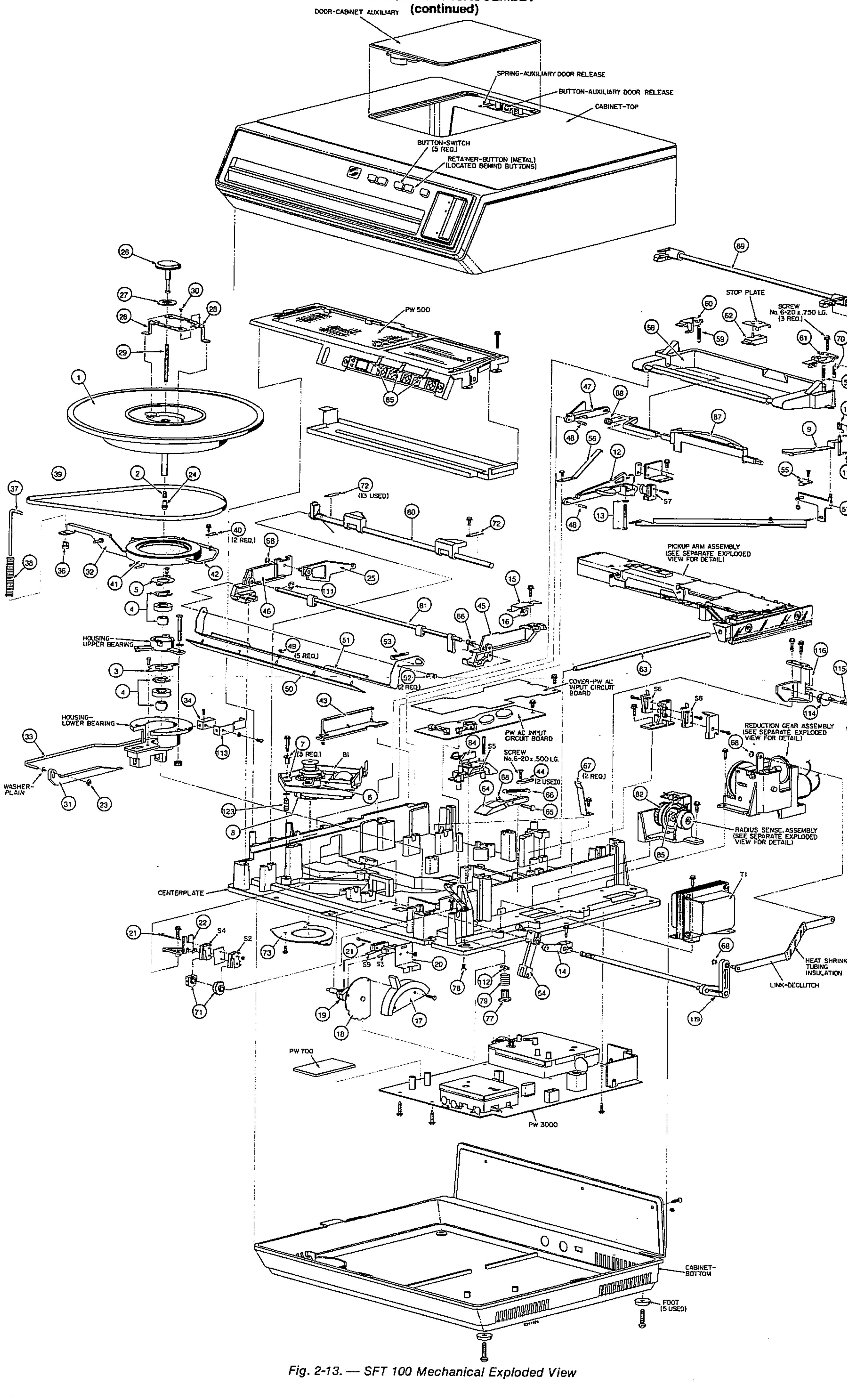


Fig. 2-13. — SFT 100 Mechanical Exploded View

MECHANICAL ADJUSTMENTS

Stylus Set Down Adjust
With player connected to monitor:

1. Insert test disc (Stock No. 149235) in player.
2. Place Function Switch in "Play" position.
3. Check monitor TV display. Stylus must land so that time display on monitor screen reads "X" ± 5 seconds.

   NOTE: "X" is nominal landing time (in seconds) for each test disc. The exact value of "X" (seconds) depends on the diameter of the first groove on the Test Disc. The diameter (in inches) of the first modulated groove is marked on each Test disc caddy label.

   Use the following formula to determine the exact value of "X" in Seconds.

   "X" = (diameter of first modulated groove − 11.483 inches) (642)

   EXAMPLE:

   "X" = (11.558" − 11.483" (642)
   "X" = (.075) (642)
   "X" = 48.150 seconds.

   If monitor displays 51 seconds as setdown time. Stylus setdown would be within the required ± 5 second setdown time and would require no adjustment.

4. Adjust landing screw (Fig. 3-1) and recheck set-down as necessary.

   NOTE: Landing screw is an allen head set screw (.078") accessable through hole in rear of cabinet. When replacing arm assembly or stylus cartridge it is advisable to first adjust screw inward approximately 2 to 3 turns (1 turn = approximately 1 minute play time) then adjust screw out to proper stylus landing position.

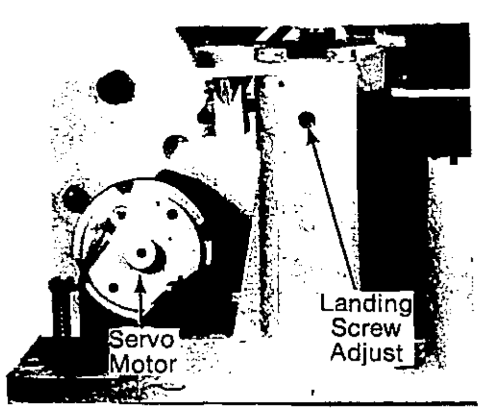


Fig. 3-1. Landing Screw Adjust

Slider Cam Adjust
Proper positioning of the slider Cam is extremely important. It is the main mechanical timing adjustment on which all other mechanical adjustments are based. Therefore this adjustment must be checked or performed prior to all other mechanical adjustments.

1. Remove AC power from player and place function lever in "PLAY" position.
2. Loosen 1/4" hex head screw in slider cam actuating arm (Fig. 3-2).

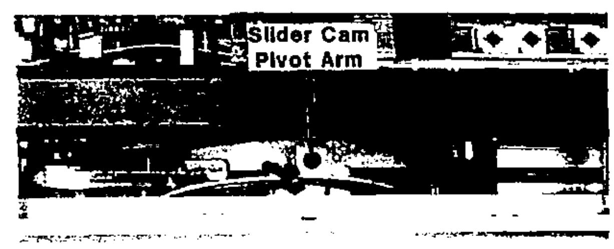


Fig. 3-2. Slider Actuating Pivot Arm

3. Position pivot arm so that the turntable shaft follower (item 24) is resting on the flat surface (highest level) of the slider cam (item 31). Tighten hex head screw in pivot arm (Fig. 2-13).
4. Place function lever in "LOAD" position, check that turntable shaft follower is resting on the flat surface (lowest level) of the slider Cam (item 31).

NOTE: The turntable shaft follower (item 24) must not rest on the slope portion of the slider Cam (item 31) in either the "PLAY" or "LOAD" mode of operation.

Caddy Entry Door Adjust

1. Place function lever in "LOAD" position.
2. Loosen 1/4" hex head screw in caddy door actuating pivot arm (item 14) Figs. 3-3 & 2-13.
3. Position pivot arm so that caddy door (item 51) just clears caddy entry. Tighten 1/4" hex head screw.
4. Place Function lever in "PLAY" position. Check that caddy entry door (item 51) blocks caddy entry.
5. Place Function lever in "OFF" position. Caddy entry door should travel an additional 1/16" (approximately) to completely block caddy entry opening without binding.

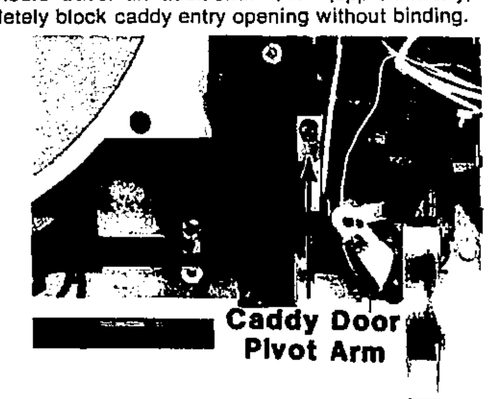


Fig. 3-3. Caddy Door Actuating Pivot Arm

ANTENNA PUSH ROD CAP ADJUST
With cabinet bottom removed:

1. Place function switch lever in "off" position.
2. Loosen Allen head set screw (.050") (item 35) in antenna push rod cap (item 34). Position push rod cap so that antenna switch (on PW3000 circuit board assembly) just bottoms out.

MECHANICAL ADJUSTMENTS
(continued)

3. Check antenna switch action by placing function lever in "off" position and then in "play" position to be certain antenna switch is operating properly (Figs. 3-4 & 2-13).

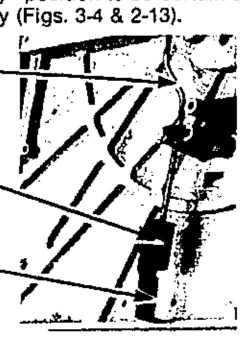


Fig. 3-4. Antenna Push Rod Cap

S2 AC Power "ON" Switch Cam Adjust

1. Place function switch lever in "off" position.
2. Loosen allen head set screw (.050") in S2 cam (item 19) and position cam so that switch S2 is just turned "off" and tighten set screw, Figs. 3-5 & 2-13.
3. Place function switch lever in "Play" position and check that switch S2 is "on".

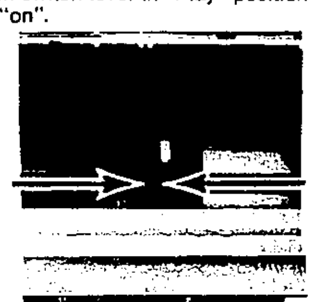


Fig. 3-5. AC Play/Power Switch Cam

S3 DC Play Switch Cam Adjust

1. Place function switch lever in "Play" position.
2. Loosen allen head set screw (.050") in S3 cam (item 71) and position cam so that switch S3 is "on" and tighten set screw, Figs. 3-6 & 2-13.
3. Place function switch lever in "Load" position, switch S3 should be "off". Place function switch lever in "Play" and "off" positions - Switch "S3" should be "on".



Fig. 3-6. DC Play Switch Cam

S4 AC Play Switch Cam Adjust

Use same procedure as set forth for S3 DC Play Switch, Figs. 3-5 & 2-13.

Lifter Latch Switch Adjust (S9)

1. Place function lever in "Load" position.
2. Loosen allen head set screw on S9 actuating cam and position cam to the point just prior to switch activation (click).
3. Check operation: Switch S9 (Lifter Latch Switch) must turn "off" (open) just prior to S3 (DC Play Switch) activation (turn "on") when function lever is moved from "load" to "play" position. Conversely S3 (DC Play Switch) must turn "off" (open) just prior to S9 (Lifter Latch Switch) turn "on" (close) when function lever is moved from "play" to "load" position.

Radius Sensor Assembly

When replacing pickup arm assembly, be certain pickup arm is in it's outermost position and the radius sensor assembly is almost in the full counterclockwise position, Figs. 3-9 & 2-11.

NOTE: Rotate radius sensor gear full counterclockwise. Just before meshing radius sensor gear and pickup arm gear rack rotate radius sensor clockwise about 2 to 3 gear teeth. **DO NOT** completely bottom out radius sensor gear.

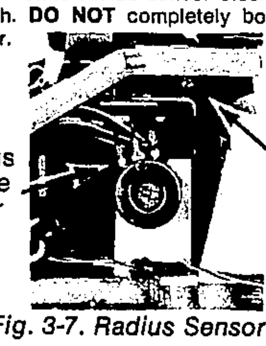


Fig. 3-7. Radius Sensor Assembly

Turntable Height Adjust

To check turntable height - remove stylus cartridge from pick-up arm assembly, insert turntable height gauge (Stock No. 149239). Place disc in player in "PLAY" mode with AC cord removed from power source. Hold height gauge in arm assembly firmly - be sure plunger is free to indicate properly, Fig. 3-8.

CAUTION: Use old disc or reserve one side of test disc for this procedure. **DO NOT** use a good disc for this procedure.

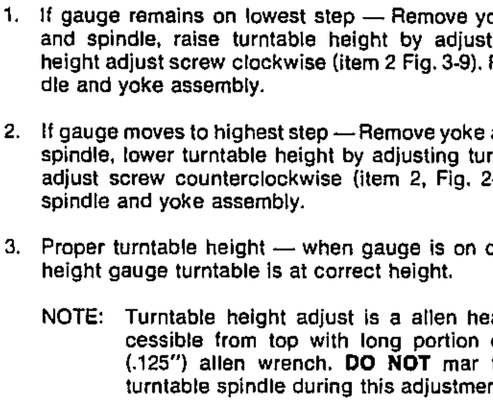


Fig. 3-8. Turntable Height Gage

1. If gauge remains on lowest step — Remove yoke assembly and spindle, raise turntable height by adjusting turntable height adjust screw clockwise (item 2 Fig. 3-9). Replace spindle and yoke assembly.
2. If gauge moves to highest step — Remove yoke assembly and spindle, lower turntable height by adjusting turntable height adjust screw counterclockwise (item 2, Fig. 2-13). Replace spindle and yoke assembly.
3. Proper turntable height — when gauge is on center step of height gauge turntable is at correct height.

NOTE: Turntable height adjust is a allen head screw accessible from top with long portion of extra long (.125") allen wrench. **DO NOT** mar the inside of turntable spindle during this adjustment.

MECHANICAL ADJUSTMENTS (continued)

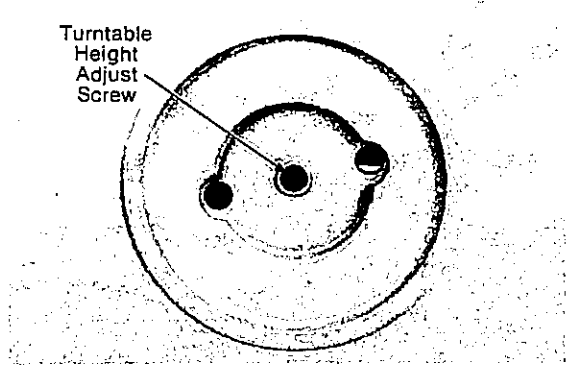


Fig. 3-9. Turntable Height Adjust Screw

Stylus Cleaner Adjust

1. Remove stylus cartridge from pickup arm assembly and store in safe place to prevent damage to stylus.
2. Insert caddy in player.
3. Slowly remove loaded caddy observing action of left receiver pad and sweeper actuating cam (item 12) and stylus lifter in arm assembly, Figs. 3-10 & 2-13.
4. As caddy is being removed and it just clears the slope of the highest portion of actuating Cam (item 12), sweeper switch S7 should be actuated (turned on) causing stylus lifter (in pickup arm assembly) to lower. If this does not occur position switch S7 so that it does occur.
5. Continue removing caddy slowly — as caddy just clears the idle slope of actuating Cam (item 12), the sweeper arm should trip to clean the stylus. If the sweeper arm does not trip at this point adjust screw (item 13) to make it happen.
6. As caddy clears actuating Cam, just after sweeper arm trips, the stylus lifter should raise.

NOTE: Switch S7 controls stylus lifter action during this function and adjustment of actuating Cam adjustment screw (item 13) controls tripping of sweeper

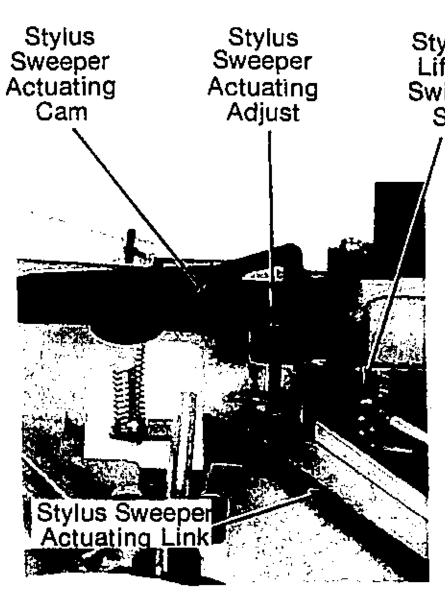


Fig. 3-10. Sweeper Actuating Cam

Spine Sense Switches S6 & S8

Spine sense switches S6 & S8 should be in the "ON" state anytime a disc and spine are present in the player. If necessary, bend forward slightly the tab portion of the switches which contact the spine, Fig. 3-11.



Fig. 3-11. Spine Sense Switches

Spindle Pulldown Adjust

Adjust spindle pulldown lever link (item 37) so that spindle retaining yoke assembly (item 28) bottoms out, just touches turntable as loaded caddy is being inserted into the player. Clockwise rotation of lever link (item 37) pulls yoke assembly toward turntable, Figs. 3-12 & 2-13.

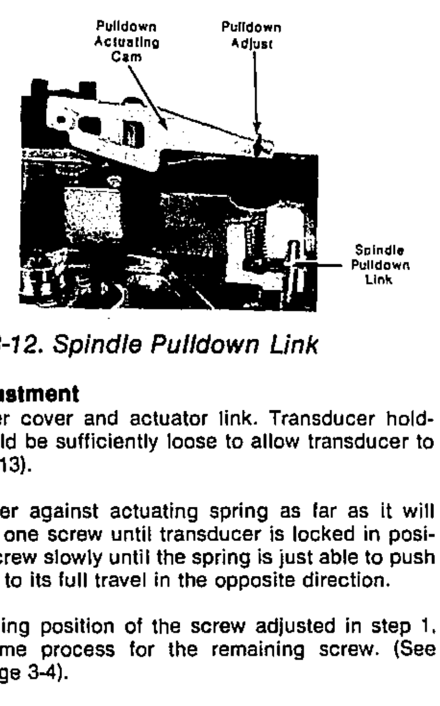


Fig. 3-12. Spindle Pulldown Link

Transducer Adjustment

Remove transducer cover and actuator link. Transducer hold-down screws should be sufficiently loose to allow transducer to slide freely (Fig. 3-13).

1. Push transducer against actuating spring as far as it will travel. Tighten one screw until transducer is locked in position. Loosen screw slowly until the spring is just able to push the transducer to its full travel in the opposite direction.
2. Without changing position of the screw adjusted in step 1, repeat the same process for the remaining screw. (See Lubrication page 3-4).



Fig. 3-13. Transducer Assembly

Turntable Motor Speed Adjust

1. Turn motor mount screw (screw located farthest from turntable center Fig. 2-7) clockwise until it bottoms out (just begins to tighten).
2. Adjust same motor mount screw counterclockwise 1 turn ± 1/2 turn, until turntable drive belt rides exact center of motor drive pulley.

LUBRICATION

Function Lever Detent
Use Stock No. 149247 Rykon "O" Grease sparingly on Function Lever Detent.

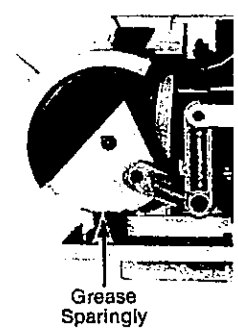


Fig. 3-14. Function Lever Detent

Turntable Lift Slider Cam
Use Stock No. 149247 Rykon "O" Grease sparingly on Turntable Lift Slider Cam.

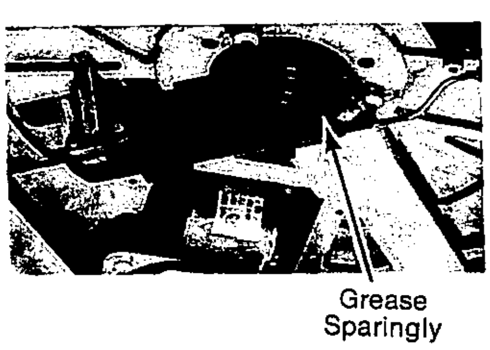


Fig. 3-15. Turntable Lift Slider Cam

Arm Drive Gears
Use Stock No. 149247 Rykon "O" Grease sparingly on Arm Drive Gears.

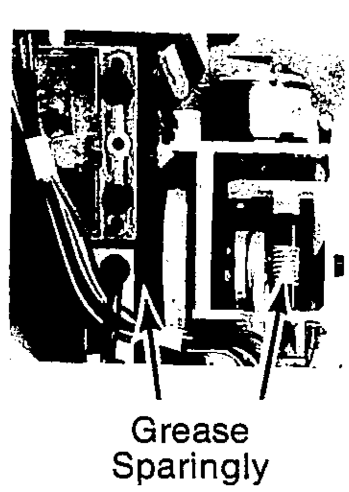


Fig. 3-16. Arm Drive Gears

Motor Bearings
Use Stock No. 149053 Omnilube 350 oil sparingly on Turntable and Servo Motor bearings.

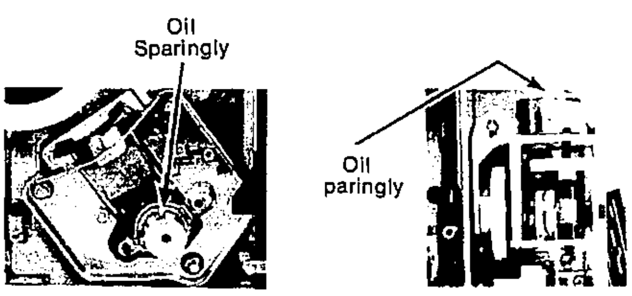


Fig. 3-17. Turntable And Servo Motors

Turntable Shaft Bearings
Use Stock No. 149053 Omnilube 350 oil sparingly on Turntable Shaft Bearings.



Figure 3-18. Turntable Shaft Bearings

Transducer Assembly
Use Stock No. 149248 DC111 Silicone Grease sparingly (thin even coat) on Transducer Assembly.

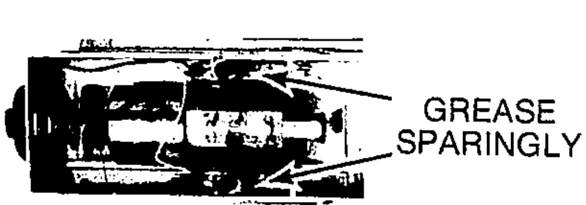


Fig. 3-19. Transducer Assembly

ELECTRICAL ADJUSTMENTS

Test Equipment Required:

Test Equipment	Specifications
Digital Voltmeter	Range: .1V DC to 30V DC Accuracy: ± 1%
Oscilloscope	Triggered Response: DC −20 MHz. Sensitivity: 5mV/cm Maximum Sweep Rate: .1μS/cm
Frequency Counter	Range: 50 Hz to 100 MHz. Sensitivity: 25mV to 5V
VideoDisc	Test Disc: Stock No. 149235
Color TV Receiver	Standard NTSC
Marker Generator	Range: Crystal Calibrated from 19 to 262 MHz.
Alignment Tool	Must have .056" square end (GC No. 9440 or equivalent)
Alignment Tool	2.5mm non-metallic female Hex Head adjustment tool

ELECTRICAL ADJUSTMENTS

Servo Detector Balance Adjust (R520)

1. Short TP 510 (arm output) to TP 521 (Ground)
2. Connect DVM from TP 513 to TP 514 (Fig. 4-1).
3. Adjust R520 for less than 5 millivolts.
4. Remove short from TP 510 to ground.

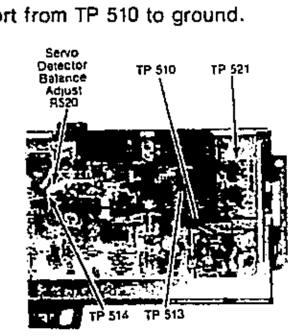


Fig. 4-1. — Servo Detector Balance Adjust

NLAC Adjust (R713 and C710)

Use test disc Stock No. 149235 on Band L (20 IRE Gray Field with 480 Hz. 100% modulation on audio carrier).

1. Place player in "pause" mode.
2. Connect DC voltmeter to test stake PW 700-CV (Fig. 4-2).
3. Adjust R713 to produce 9.5V D.C. reading.
4. Connect D.C. voltmeter to test stake TP 701.
5. Short wiper of R713 to ground with cliplead.
6. Place player in "play" mode and check that Band L is being played.
7. Adjust C710 for minimum voltage at TP 701.
8. Remove cliplead.

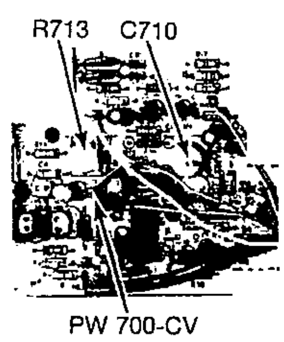


Fig. 4-2. — NLAC Adjust

Arm Servo Position Adjust (R917)

Player should be in normal play mode with a standard disc atnapproximately 30 minutes play time (30 showing on readout indicator), when making this adjustment.

1. Connect oscilloscope, to TP 532 (scope set to .1mS/Div. 2V p-p) Fig. 4-3.
2. Alternately press Visual Search "FWD" and Visual Search "REV" buttons for several seconds.

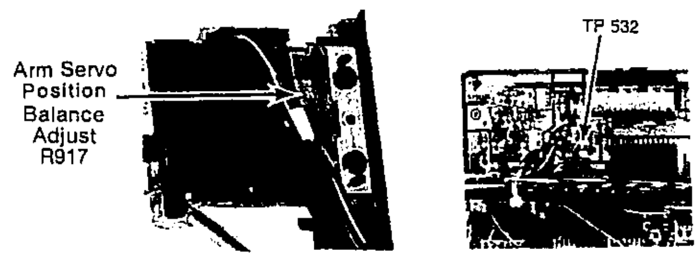


Fig. 4-3. — Servo Position Adjust

3. Adjust arm servo position control (R917 on pick-up arm assembly) until width of kick pulse is approximately the same in both Visual Search "FWD" and "REV" modes (approximately 450 to 750 uS width negative pulse). (See Fig. 4-4)

Note: Misadjustment of arm servo position adjustment (R917) or Servo Detector Balance Adjust (R520) could result in loss of Visual Search in one direction.

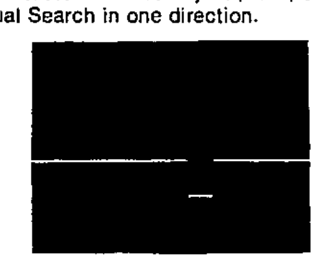


Fig. 4-4. — Servo Position Adjust Pulse

Video Demodulator VCO Adjust

1. Disconnect interconnect plug P3002 (Fig. 5-2).
2. Short the two pins of J3002 together.
3. Connect Frequency Counter via X10 probe (see note) to TP 3202.
4. Adjust C3215 for 5.25 MHz ±50 kHz.
5. Remove short from the two pins of J3002 and reconnect P3002.

Note: Typical capacity of X10 probe and counter is approximately 20-25pf. A X1 probe (typical capacity of approximately 100pf) may be used with a 33pf capacitor is placed in series with probe. This will place a load on the VCO of approximately 25pf.

Audio Demodulator VCO Adjust

1. Disconnect interconnect plug P3002 (Fig. 5-2).
2. Short the two pins of J3002 together.
3. Connect frequency counter via X10 probe (see note) to TP 3602.
4. Adjust C3607 for 716 kHz ±2 kHz.
5. Remove short from the two pins of J3002 and reconnect P3002.

Note: Typical capacity of X10 probe and counter is approximately 20-25pf. A X1 probe (typical capacity of approximately 100pf) may be used with a 33pf capacitor is placed in series with probe. This will place a load on the VCO of approximately 25pf.

ELECTRICAL ADJUSTMENTS (continued)

Video Level Adjust

1. Use Test Disc 100 IRE white field signal (Segment E).
2. Connect oscilloscope to TP 3401 (Figs. 4-9 & 5-2).
3. Adjust R3202 (video level adjust) to produce 2.8V p-p response.

Luminance Channel Null Adjust

1. Use Test Disc color bar signal (Segment D).
2. Connect oscilloscope to TP 3302 (Figs. 4-9 & 5-2).
3. Adjust R3328 for minimum chroma information (Fig. 4-5).

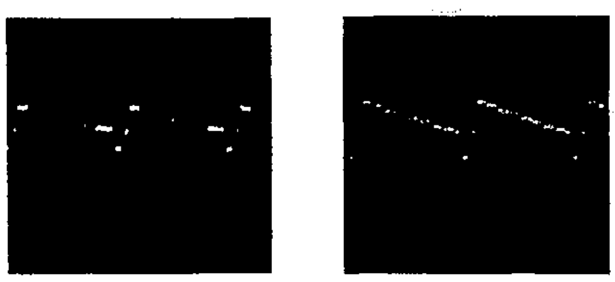


Fig. 4-5. — Waveforms Luminance Null Adjust

Chroma Channel Null Adjust

1. Use Test Disc color bar signal (Segment D).
2. Connect oscilloscope to TP 3303 (Figs. 4-9 & 5-2).
3. Adjust R3329 for minimum p-p signal (Fig. 4-6).

Note: Repeat Video Level Adjustment after completion of Luminance Channel Null and Chroma Channel Null adjustments.

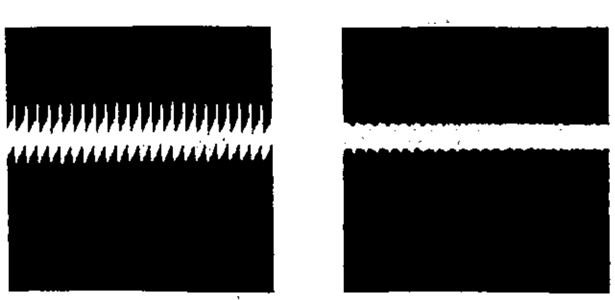


Fig. 4-6. — Waveforms Chroma Null Adjust

Vertical Detail Level Adjust

1. Use Test Disc color bar signal (Segment D).
2. Connect oscilloscope to TP 3401 (Figs. 4-9 & 5-2).
3. Adjust R3317 so that the pulse level matches **before** and **after** transition from vertical equalizing pulses to Vertical sync pulses (Fig. 4-7).

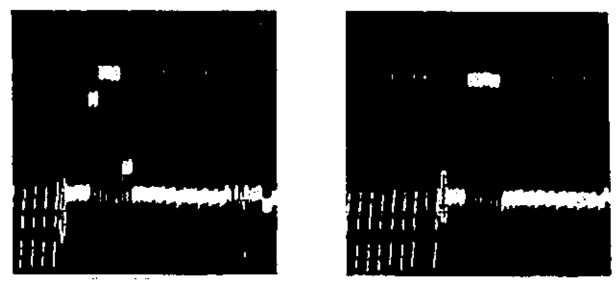


Fig. 4-7. — Vertical Equalizing-Vertical Sync Pulses

Chroma Level Adjust

1. Use Test Disc color bar signal (Segment D).
2. Connect oscilloscope to TP 3409 (Figs. 4-9 & 5-2).
3. Adjust R3312 so that the p-p level of color reference burst and sync tip to blanking are the same (Fig. 4-8).

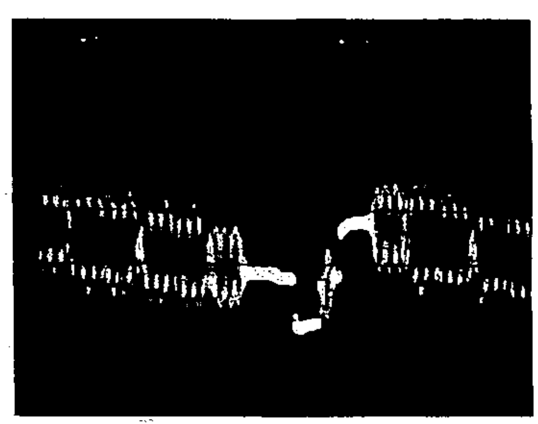


Fig. 4-8. — Color Burst/Sync Tip To Blanking Level

Defect Substitution Level Adjust

1. Use Test Disc 5 step linearity signal with 50 uS defect (Segment H).
2. Connect Disc player to TV set. Locate defect (Line No. 130) by rotating R3304 to one end of rotation (Figs. 4-9 & 5-2).
3. Adjust R3304 for proper substitution to make defect disappear (adjust for best picture).

Armstretcher Gain Adjust

1. Connect player to TV.
2. Use Test Disc and play innermost band, 60 minute area (Segment S). Press random access FWD button to access Segment S.
3. Connect a 7500 ohm resistor between TP 3405 and TP 3411 (Figs. 4-9 & 5-2).
4. Rotate R3444 fully CCW. Adjust R3444 CW for no oscillation (wiggles or horizontal color bands) in the picture.
5. Remove 7000 ohm resistor.

ELECTRICAL ADJUSTMENTS
(continued)

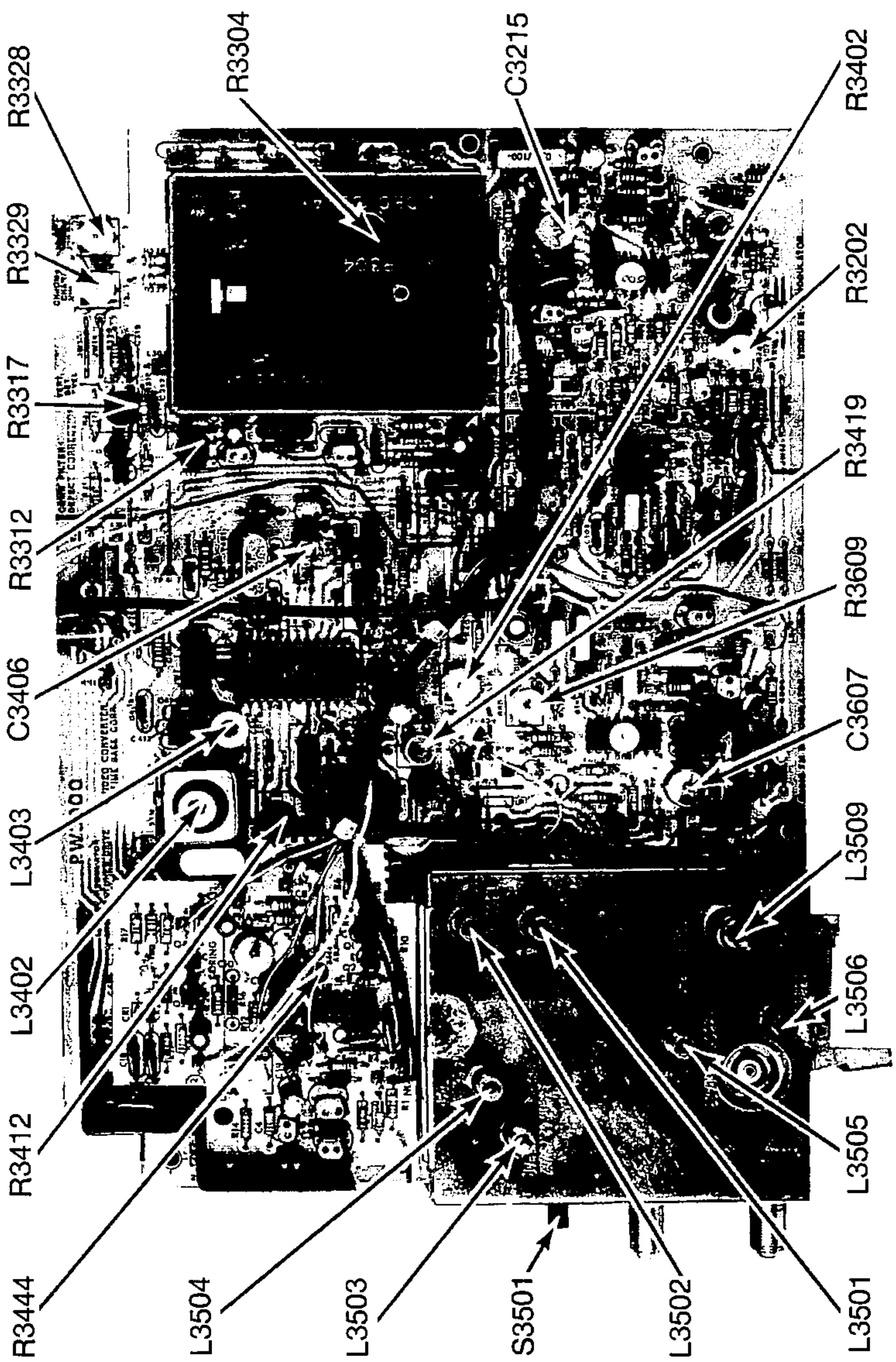


Fig. 4-9. — PW 3000 Circuit Board Electrical Adjustments

ELECTRICAL ADJUSTMENTS (continued)

R.F. Output Channel Oscillator Adjust

1. With power applied to player, place Channel Switch, S3501, in Channel 3 position (Figs. 4-9 & 5-2). Connect player to TV or 75 ohm load.
2. Connect marker generator (R. F. input) to TP 3501 and adjust for 61.25 MHz output.
3. Adjust L3501 for zero beat.
4. Place Channel Switch, S3501, in Channel 4 position.
5. Connect marker generator (R. F. input) to TP 3502 and adjust for 67.25 MHz output.
6. Adjust L3502 for zero beat.

TRAP ADJUST —

7. Turn player power off and connect marker generator output to TP 3501 marker generator set at 56.75 MHz (Fig. 5-2).
8. Connect quadrupler detector (Fig. 4-10) to J3502. Connect oscilloscope (or D.C. Voltmeter) to quadrupler detector and set oscilloscope on DC @ 10 mV/Div.

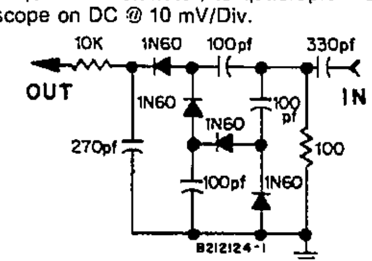


Fig. 4-10. — Quadrupler Detector

9. Adjust L3504 (Fig. 4-9) for null (minimum deflection).
10. Connect marker generator output to TP 3502, marker generator set at 62.75 MHz.
11. Adjust L3503 (Fig. 4-9) for null (minimum deflection).

BANDPASS ADJUST —

12. Connect quadrupler detector and oscilloscope as in step 8.
13. Connect marker generator to junction of R3514 and R3516 (Fig. 5-2).
14. Set marker generator to 65.75 MHz and adjust L3505 (Fig. 4-9) for peak output (maximum deflection).
15. Set marker generator to 61.25 MHz and adjust L3506 (Fig. 4-9) for peak output (maximum deflection).
16. Turn player power on and check operation. Repeat steps 13 thru 16 if necessary.

4.5 MHz Osc. Adjust

1. Connect player to TV, player in load mode.
2. Monitor a suitable point in TV IF to pick-up 4.5 MHz sound carrier with a frequency counter.
3. Adjust L3509 (Fig. 4-9) for 4.5 MHz ±1 kHz.

3.58 MHz Reference Oscillator Adjust

1. Connect player to TV, insert Test disc and place player in play mode.
2. Use full field color bar signal (Segment D) and monitor a suitable point in the TV 3.58 MHz oscillator circuit with a frequency counter.
3. Adjust C3406 (Fig. 4-9) for 3.579545 ±10Hz.

Alternate Method —

1. Connect frequency counter via X10 probe to TP 3413 (Fig. 5-2).
2. With player in load mode adjust C3406 (Fig. 4-9) for 3.579485 MHz.

(This method allows approximately 60 Hz variance as compensation for loading effect of the frequency counter).

Note: Typical capacity of X10 probe and counter is approximately 20-25pf. A X1 probe (typical capacity of approximately 100pf) may be used with a 33pf capacitor is placed in series with probe. This will place a load on the VCO of approximately 25pf.

Video Modulation Depth Adjust

1. Connect player to TV.
2. Use Test disc 120 IRE White field signal (Segment G).
3. Adjust R3402 (Fig. 4-9) Clockwise till a buzz is heard in TV audio, then turn R3402 counterclockwise to just eliminate the buzz.

Audio Level Adjust

1. Use Test disc signal with 480 Hz, 100% audio modulation (Segment E).
2. Connect oscilloscope to TP 3601 (Fig. 5-2).
3. Adjust R3609 (Fig. 4-9) for 1.2V p-p output.

VCXO Adjustment

3.58 MHz Reference Oscillator Adjustment should be checked, and if necessary performed, prior to making this adjustment.

Step A. Determining VCXO Frequency Limits

1. Connect DVM from TP 3406 to ground (Fig. 5-2).
2. Use Test Disc (Stock No. 149235) signal Segment I.
3. Connect 1.5 megohm resistor from TP 3412 to +15V source.
4. With player in play mode, record voltage measured on DVM as V1. (example V1 = 8.66V)
5. Remove 1.5 megohm resistor end from +15V source and connect it to ground.
6. Record voltage measured on DVM as V2. (example: V2 = 7.09V). Remove grounded end of 1.5 megohm resistor, leave one end connected to TP 3412.
7. Using the formula $\Delta F = 3/2\ (V1 - V2 - .177)$ kHz, calculate ΔF. (The result should be between 1.90 and 2.52 kHz.)

EXAMPLE:
$\Delta F = 3/2\ (8.66V - 7.09V - .177)$ kHz
$\Delta F = 3/2\ (1.393)$ kHz
$\Delta F = 1.5 \times 1.393$ kHz
$\Delta F = 2.09$ kHz

ELECTRICAL ADJUSTMENTS
(continued)

Note: The voltages shown in solving the formula to determine ΔF are example voltages - actual measured voltages (V1 & V2) will have to be substituted.

8. Calculate high frequency limit. fH = 1535.625 + ΔF kHz
   EXAMPLE: fH = 1535.625 kHz + 2.09 kHz

9. Calculate low frequency limit. fL = 1535.625 - ΔF kHz
   EXAMPLE: fL = 1535.625 kHz — 2.09 kHz

Step B. VCXO Adjust

1. Connect frequency counter, via X10 probe (see Note), to TP 3404 (Fig. 5-2).

Note: Typical capacity of X10 probe is approximately 20-25 pf. A X1 probe (typical capacity of approximately 100 pf) may be used with a 33 pf capacitor is placed in Series with probe This will place a load on the VCO of approximately 25 pf.

2. Using Test Disc Segment I signal, place player in Play mode. push "pause button." Frequency counter should indicate a frequency of 1535.625 kHz ±100 Hz. If not adjust L3403 for 1535.625 kHz ±100 Hz.

Caution: 1.5 Meg resistor previously connected to TP 3412 must be open at one end for this check/adjustment.

3. Connect 1.5 meg resistor from TP 3412 to +15V source. With player in "Play" mode Release Pause mode. Frequency indicated on frequency meter should be ±100 Hz of previously calculated fH (example — 1537.715 kHz ±100 Hz). If not - adjust R3412 to achieve the previously calculated fH.

4. Remove 1.5 meg resistor from +15V and recheck Step 2.

5. Connect 1.5 meg resistor from TP 3412 to ground (player in Play mode using Test Disc Segment I signal). Frequency indicated on frequency counter should be ±100 Hz of previously calculated fL (example 1533.445 kHz ±100 Hz). If not, adjust L3402 to remove approximately 1/2 of the frequency error and adjust R3412 to remove the remainder.

6. Repeat Steps 2, 3, and 5 until limits of each are met.

7. Remove 1.5 meg from TP 3412.

Phase Detector Gain Adjust

1. Use Test Disc - any signal, place player in play mode.

2. Connect oscilloscope to TP 3403 (Fig. 5-2).

3. Short TP 3402 to TP 3410 with a clip lead.
   Short TP 3406 to TP 3410 with a clip lead.

4. Adjust R3419 for 3V p-p indication on oscilloscope.

5. Remove shorting clip leads from TP 3402 and TP 3406 to TP 3410.

PW 3000 — Component Location Guide

C3101 ...6D
C3102 ...6C
C3103 ...6D
C3104 ...6D
C3105 ...6D
C3106 ...5D
C3107 ...6D
C3108 ...5E
C3109 ...5E
C3110 ...6E
C3111 ...5D
C3201 ...7D
C3202 ...7E
C3203 ...7E
C3204 ...7E
C3205 ...7D
C3206 ...7D
C3207 ...7D
C3208 ...7D
C3209 ...7E
C3210 ...7D
C3211 ...7E
C3212 ...7D
C3213 ...7D
C3214 ...8D
C3215 ...8D
C3216 ...8E
C3217 ...8D
C3218 ...8D
C3219 ...8E
C3221 ...8E
C3222 ...8D
C3223 ...8D
C3224 ...8E
C3225.....?
C3226 ...7E
C3227 ...7E
C3228 ...8D
C3229 ...8D
C3301 ...8D
C3302 ...7C
C3303 ...7C
C3304 ...8C
C3305 ...6C
C3306 ...6C
C3307 ...7B
C3308 ...7C
C3309 ...7B
C3310 ...7C
C3311 ...7C
C3312 ...6A
C3313 ...6B
C3314 ...7B
C3315 ...6B
C3316 ...6A
C3317 ...8B
C3318 ...7A
C3319 ...7A
C3320 ...6B
C3221 ...7C
C3322 ...7B
C3323 ...8B
C3324 ...8A
C3325 ...8B
C3326 ...6C
C3327 ...8B
C3328 ...7B
C3329 ...7B
C3330 ...8A
C3331 ...7A
C3332 ...7B

C3333 ...8B
C3335 ...8C
C3336 ...8B
C3401 ...3B
C3402 ...3C
C3403 ...4B
C3404 ...5B
C3405 ...5B
C3406 ...5B
C3407 ...5A
C3408 ...4A
C3409 ...4A
C3410 ...4C
C3411 ...4C
C3412 ...4A
C3413 ...3C
C3414 ...4A
C3415 ...5A
C3416 ...2A
C3417 ...5C
C3418 ...5B
C3419 ...5B
C3420 ...5B
C3421 ...5C
C3422 ...2A
C3423 ...5C
C3424 ...1B
C3425 ...2A
C3426 ...1B
C3427 ...1C
C3428 ...1B
C3429 ...5C
C3430 ...2C
C3501 ...2C
C3502 ...2C
C3503 ...3C
C3504 ...3C
C3505 ...3D
C3506 ...1D
C3507 ...1C
C3508 ...1D
C3509 ...1C
C3510 ...1E
C3511 ...2D
C3512 ...2E
C3513 ...1E
C3514 ...2D
C3515 ...3D
C3516 ...2C
C3617 ...5D
C3618 ...4D
C3619 ...3E
C3801 ...1A

CR3101 ..6D
CR3102 ..6E
CR3501 ..3E
CR3601 ..3D
CR3602 ..3E

E3201....7E
E3202....8D
E3301 ...7C
E3302 ...7C
E3303 ...8C
E3304....8B
E3305 ...6C
E3306 ...8C
E3501....2C
E3502....3D
E3502 ...3C
E3601 ...5C

J3001....5A
J3002....5D
J3501....1E
J3501....1D

L3101....6D
L3201....7E
L3202....7E
L3203....7D
L3204....7D
L3205....7E
L3206....8D
L3207....8D
L3208....7D
L3301....7C
L3302....6B
L3303....7A
L3304....6B
L3305....8B
L3306....8B
L3401....3A
L3402....4A
L3403....4B
L3404....5A
L3405....6B
L3501....2D
L3502....2C
L3503....1C
L3504....2C
L3505....2E
L3506....2E
L3507....1E
L3509....3E
L3601....5E
L3602....4E
L3603....5E
L3604....5D

Q3101 ...6D
Q3102 ...5E
Q3103 ...6E
Q3104 ...6E
Q3201 ...7E
Q3202 ...8D
Q3301 ...8B
Q3302 ...6C
Q3303 ...6A
Q3304 ...6A
Q3305 ...7B
Q3306 ...8B
Q3401 ...4C
Q3402 ...5C
Q3403 ...2A
Q3404 ...1A
Q3405 ...1B
Q3406 ...1B
Q3407 ...2B
Q3408 ...2B
Q3601 ...3D
Q3801 ...2B

R3101 ...6D
R3102 ...6D
R3103 ...5D
R3104 ...6D
R3105 ...6D
R3106 ...6D
R3107 ...5D
R3108 ...5D
R3109 ...5D
R3110....6E

R3111....6E
R3112....6E
R3113....6E
R3114....6E
R3116....6E
R3117....6E
R3118 ...5D
R3201 ...6D
R3202....7E
R3203 ...7D
R3204....7E
R3205 ...7D
R3206....7E

R3208 ...7D
R3209....6E
R3210....8E
R3211....8E
R3212 ...8D
R3213....8E
R3214 ...8D
R3215....8E
R3216 ...8D
R3217 ...7D
R3218....8E
R3219....7E
R3220....8E
R3301 ...6C
R3302 ...6C
R3303 ...8C
R3304 ...8C
R3305 ...6C
R3306 ...6C
R3307 ...8B
R3308 ...7C
R3309 ...8B
R3310 ...8C
R3311 ...6A
R3312 ...6A
R3313 ...6A
R3314 ...6A
R3315 ...6B
R3316 ...7B
R3317 ...6A
R3318 ...6A
R3319 ...7B
R3320 ...7A
R3321 ...8A
R3322 ...8B
R3323 ...8C
R3324 ...6C
R3325 ...7C
R3326 ...8A
R3327 ...7A
R3328 ...8A
R3329 ...7A
R3330 ...8B
R3401 ...3C
R3402 ...4C
R3403 ...5C
R3404 ...5C
R3405 ...4C
R3406 ...4B
R3407 ...4B
R3408 ...5C
R3409 ...4B
R3411 ...4B
R3412 ...3B
R3413 ...5C
R3414 ...5A
R3415 ...3B

R3416 ...4B
R3417 ...4C
R3418 ...3C
R3419 ...4C
R3420 ...4B
R3421 ...4C
R3422 ...4C
R3423 ...2A
R3424 ...5B
R3425 ...5B
R3426 ...2A
R3427 ...5B
R3428 ...2A
R3429 ...2A
R3430 ...6B
R3431 ...2A
R3432 ...1B
R3433 ...3C
R3434 ...2A
R3435 ...2A
R3436 ...1B
R3437 ...3B
R3438 ...1B
R3439 ...1C
R3440 ...1B
R3441 ...1B
R3442 ...2B
R3443 ...2B
R3444 ...2B
R3445 ...2B
R3446 ...2B
R3447 ...3B
R3448 ...3B
R3449 ...3B
R3450 ...2B
R3451 ...5C
R3452....4B
R35001 ..1C
R3502 ...2C
R3503 ...2C
R3504 ...2C
R3505 ...2C
R3506 ...3D
R3507 ...2D
R3508 ...2D
R3509 ...2D
R3510 ...1D
R3511 ...2D
R3512 ...1C
R3513 ...1D
R3514 ...1D
R3515 ...2D
R3516 ...1D
R3517 ...2D
R3518 ...2D
R3519....2E
R3520 ...3D
R3521....3E
R3522....3E
R3523....1E
R3524....1E
R3601 ...5D
R3602....4E
R3603 ...4D
R3604 ...4D
R3605 ...4D
R3606 ...4D
R3607 ...4D
R3608 ...3D
R3609 ...4D
R3610 ...3D

R3611 ...5D
R3612 ...4D
R3613 ...4D
R3801 ...2C
R3802 ...2B
R3803 ...3C
R3804....2B

S3502....1E
S3503 ...1D

U3201 ...7D
U3301 ...7B
U3401 ...2B
U3402 ...4B
U3501 ...2D
U3601 ...4D
U3801 ...1A

VR3301 ..7B

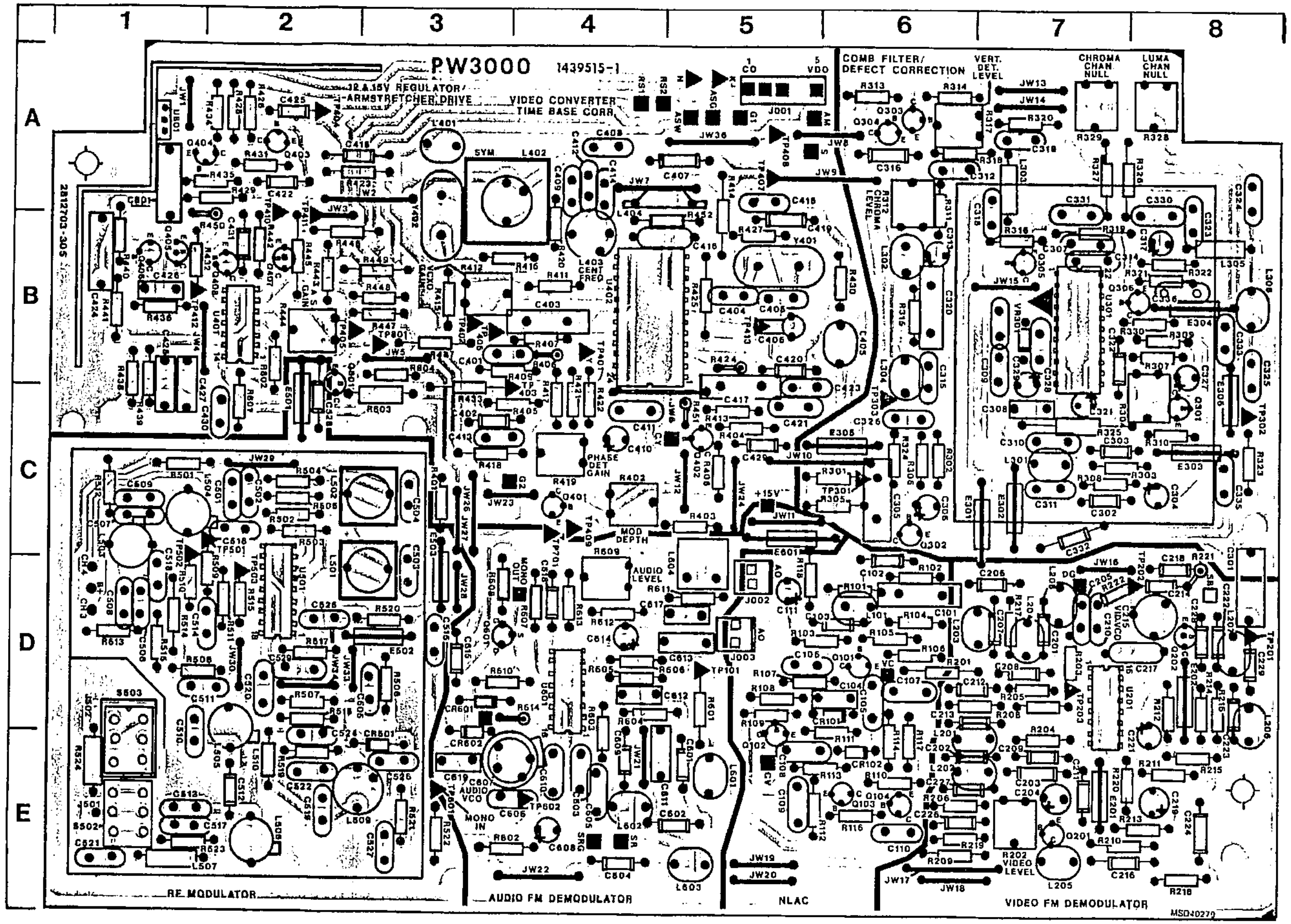
Y3401....5B
Y3402....3A

STAKES

AM 5A
AO 5D
ASG 5A
ASW.....5A
CH3 .....1D
CH4 .....1D
CO 5A
CV 5E
K.........5A
N.........5A
RS1 .....4A
RS2 .....4A
S.........5A
SB 8D
SR.......4E
VDO.....5A
Y.........4B

TEST POINTS

TP3101 ..5D
TP3201 ..8D
TP3203 ..7D
TP3301 ..6C
TP3302 ..8C
TP3303 ..6C
TP3401 ..4C
TP3402 ..3B
TP3403 ..4C
TP3404 ..2A
TP3405 ..3B
TP3406 ..3B
TP3407 ..5A
TP3408 ..5A
TP3409 ..4C
TP3410 ..2A
TP3411 ..2A
TP3412 ..1B
TP3413 .5B
TP3501 . 2C
TP3502 ..1C
TP3503 ..2D
TP3601 . 3E
TP3602 4E
TP3701 ..4C
TP3801 ..3B
TP3802 .1A



NOTE: Add 3000 Prefix To Item Numbers

Fig. 5-1. — PW 3000 Signal Processing Circuit Board Assembly

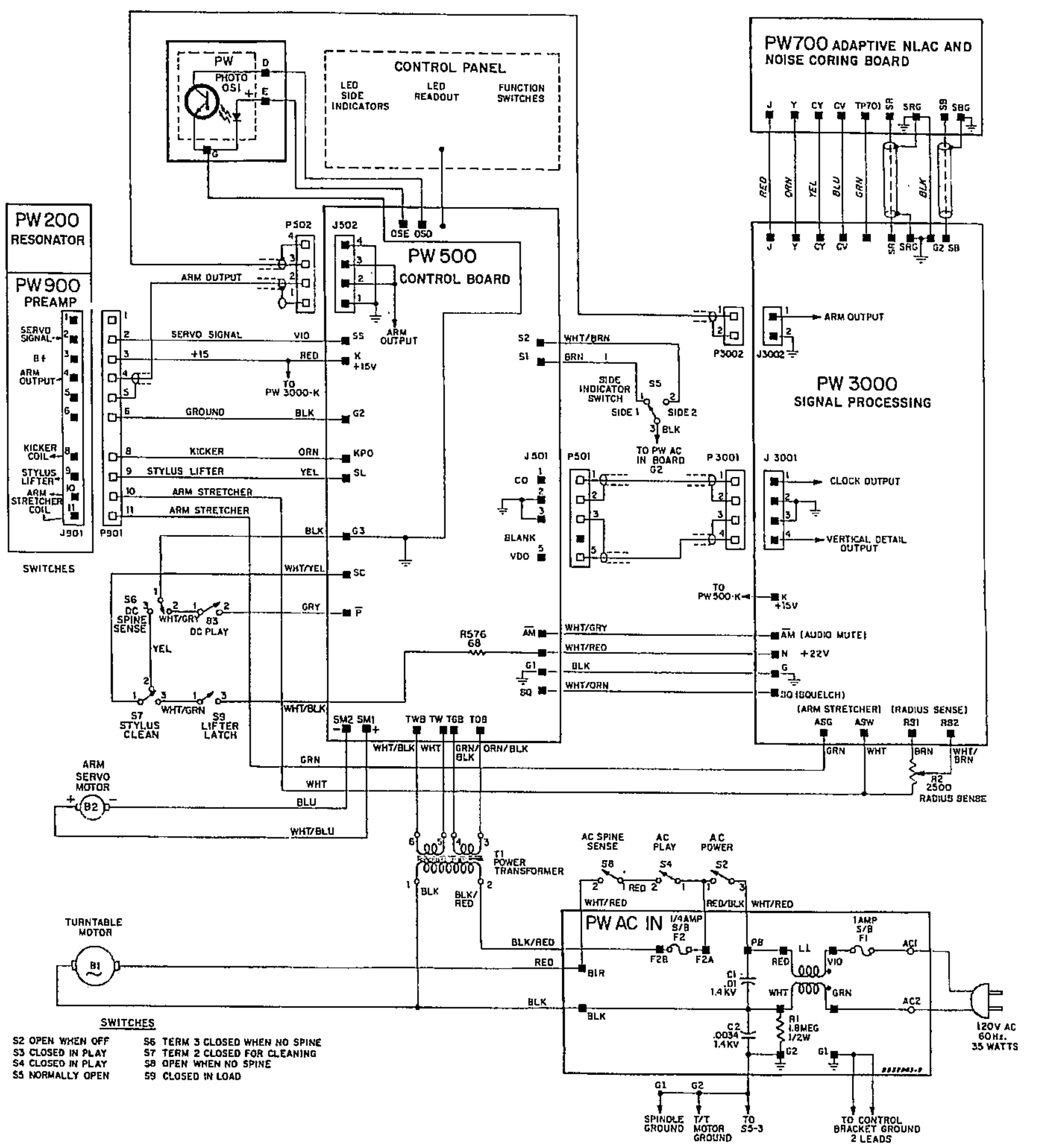


Fig. 5-2. — SFT 100 Interconnect Wiring Diagram

RESONATOR, PREAMP, AND SYSTEM CONTROL SCHEMATIC

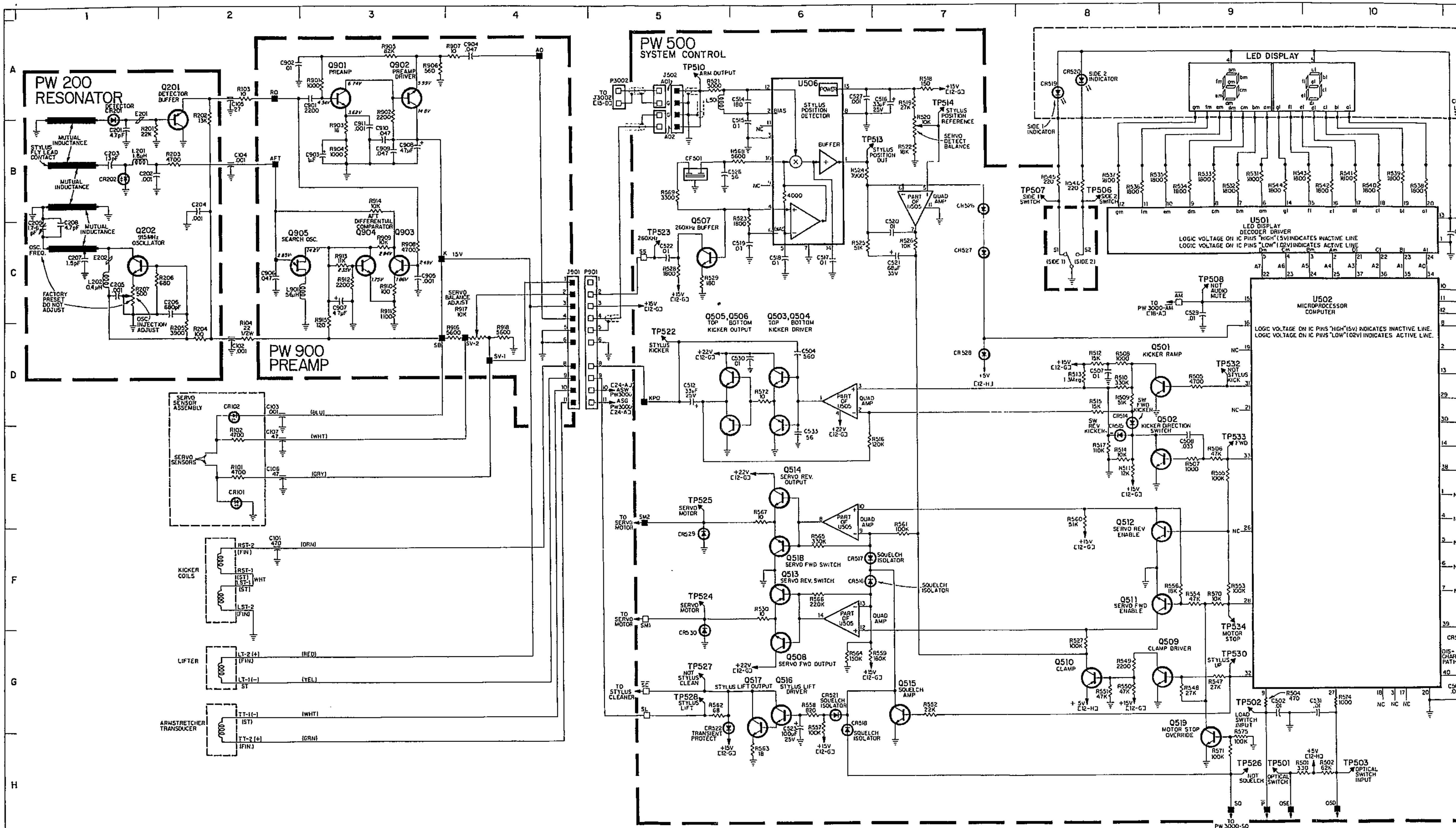
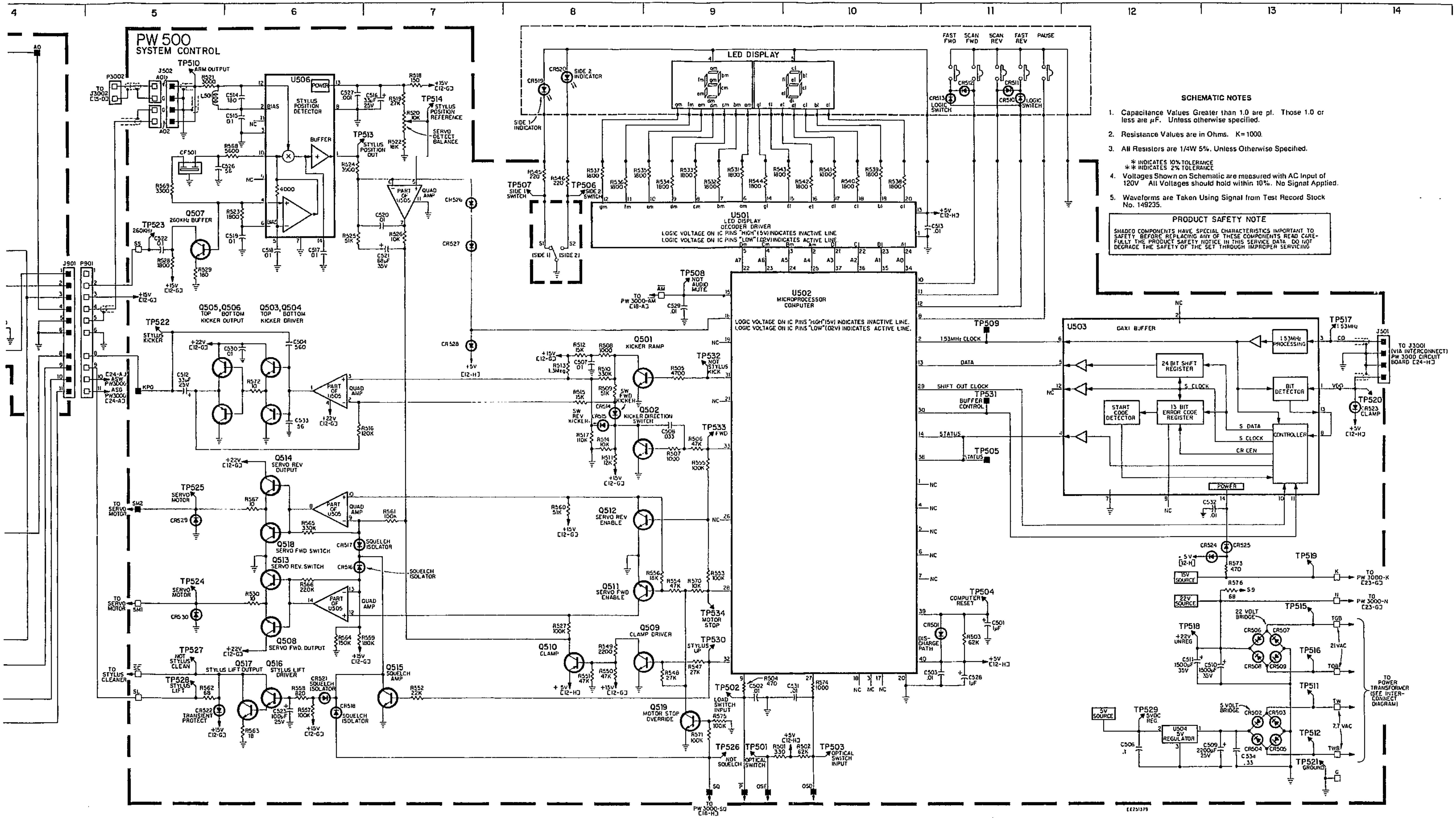


Fig. 5-3. — Resonator, Preamp, and System Control Schematic Diagram

RESONATOR, PREAMP, AND SYSTEM CONTROL SCHEMATIC



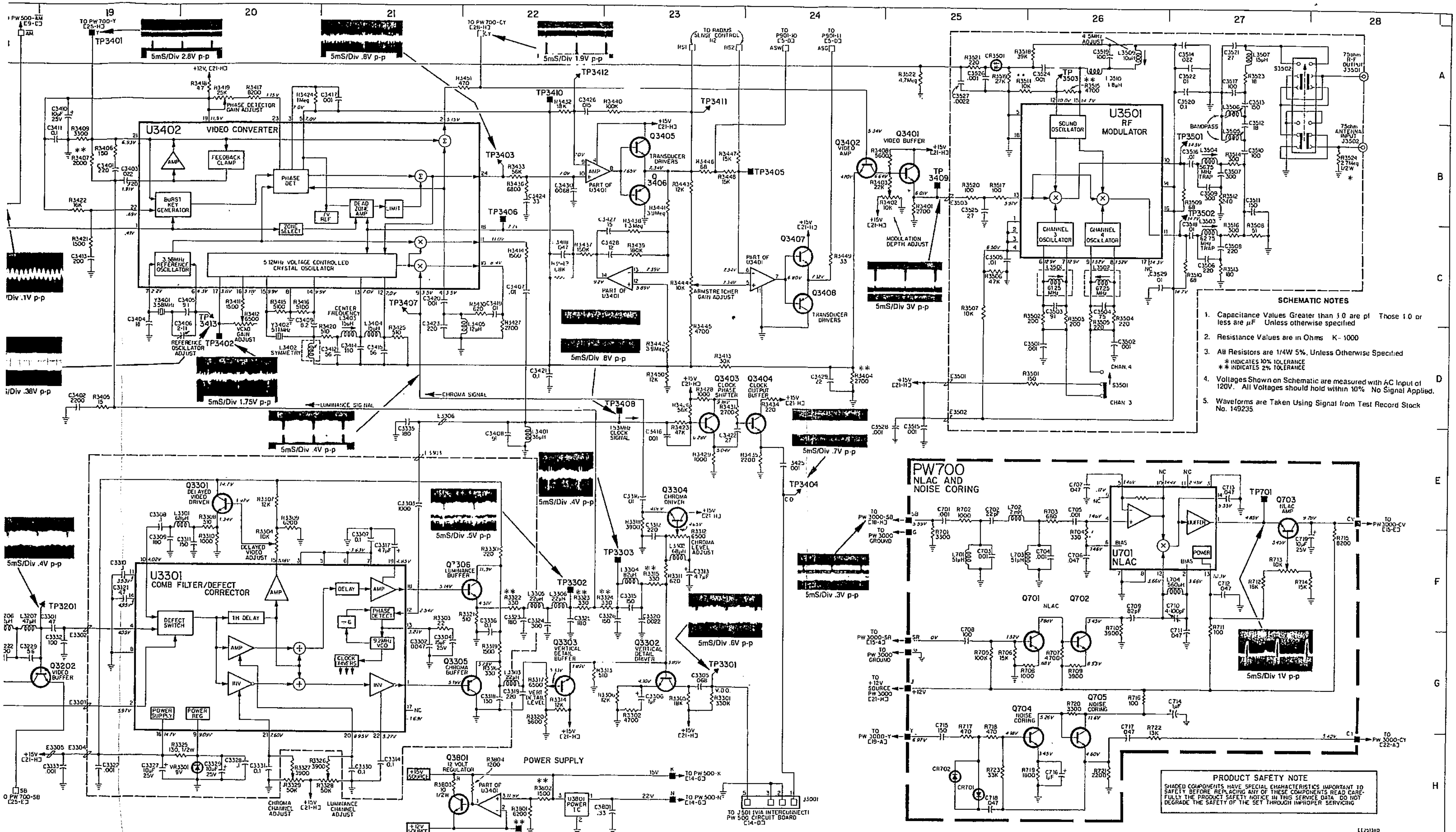
SCHEMATIC NOTES

1. Capacitance Values Greater than 1.0 are pf. Those 1.0 or less are μF. Unless otherwise specified.
2. Resistance Values are in Ohms. K=1000.
3. All Resistors are 1/4W 5%. Unless Otherwise Specified.
   * INDICATES 10% TOLERANCE
   ** INDICATES 2% TOLERANCE
4. Voltages Shown on Schematic are measured with AC Input of 120V All Voltages should hold within 10%. No Signal Applied.
5. Waveforms are Taken Using Signal from Test Record Stock No. 149235.

PRODUCT SAFETY NOTE

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING

Fig. 5-3. — Resonator, Preamp, and System Control Schematic Diagram



SCHEMATIC NOTES

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Fig. 5-4. — Signal Processing, NLAC And Noise Coring Schematic Diagram

SIGNAL PROCESSING, NLAC AND NOISE CORING SCHEMATIC

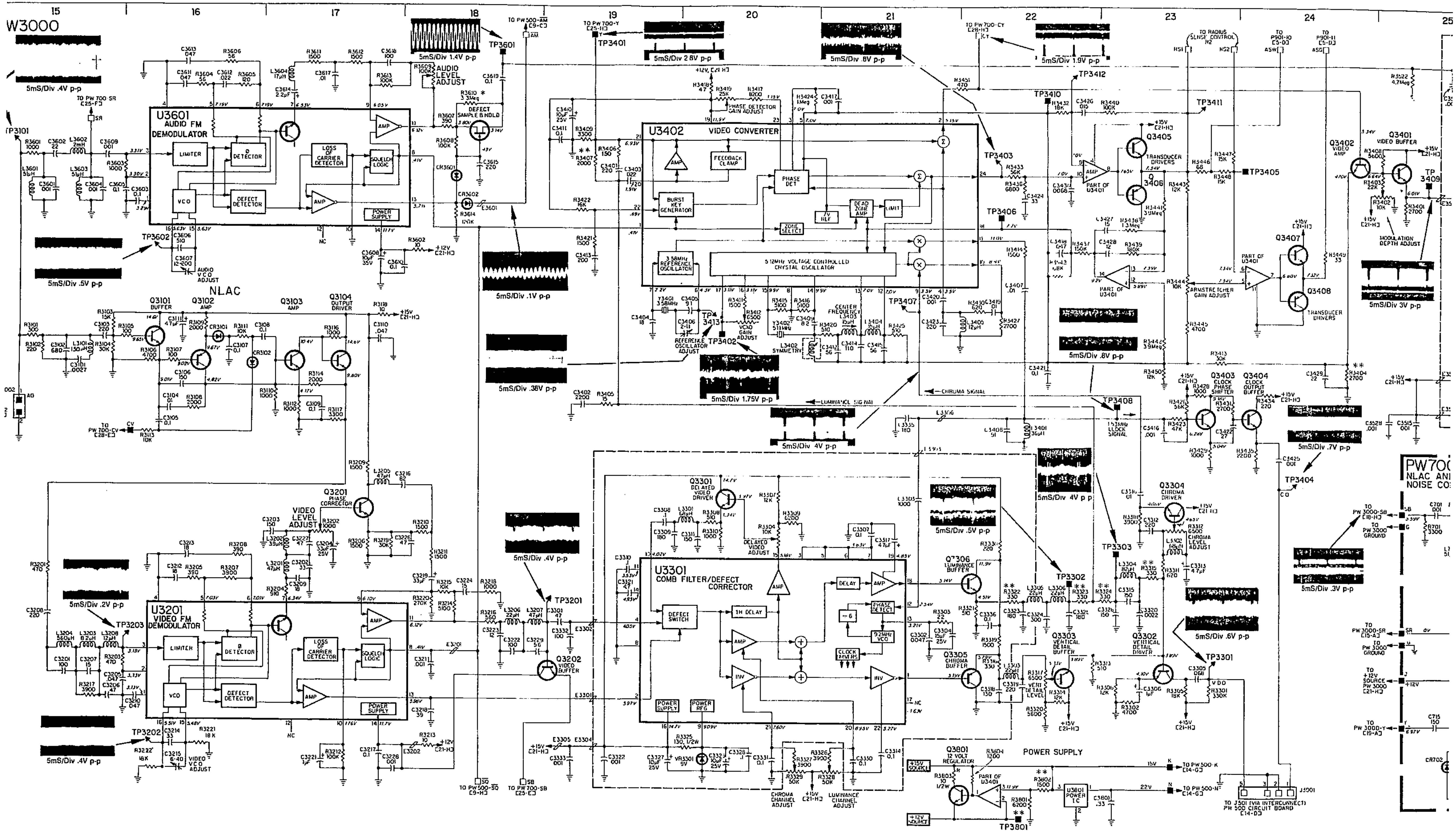
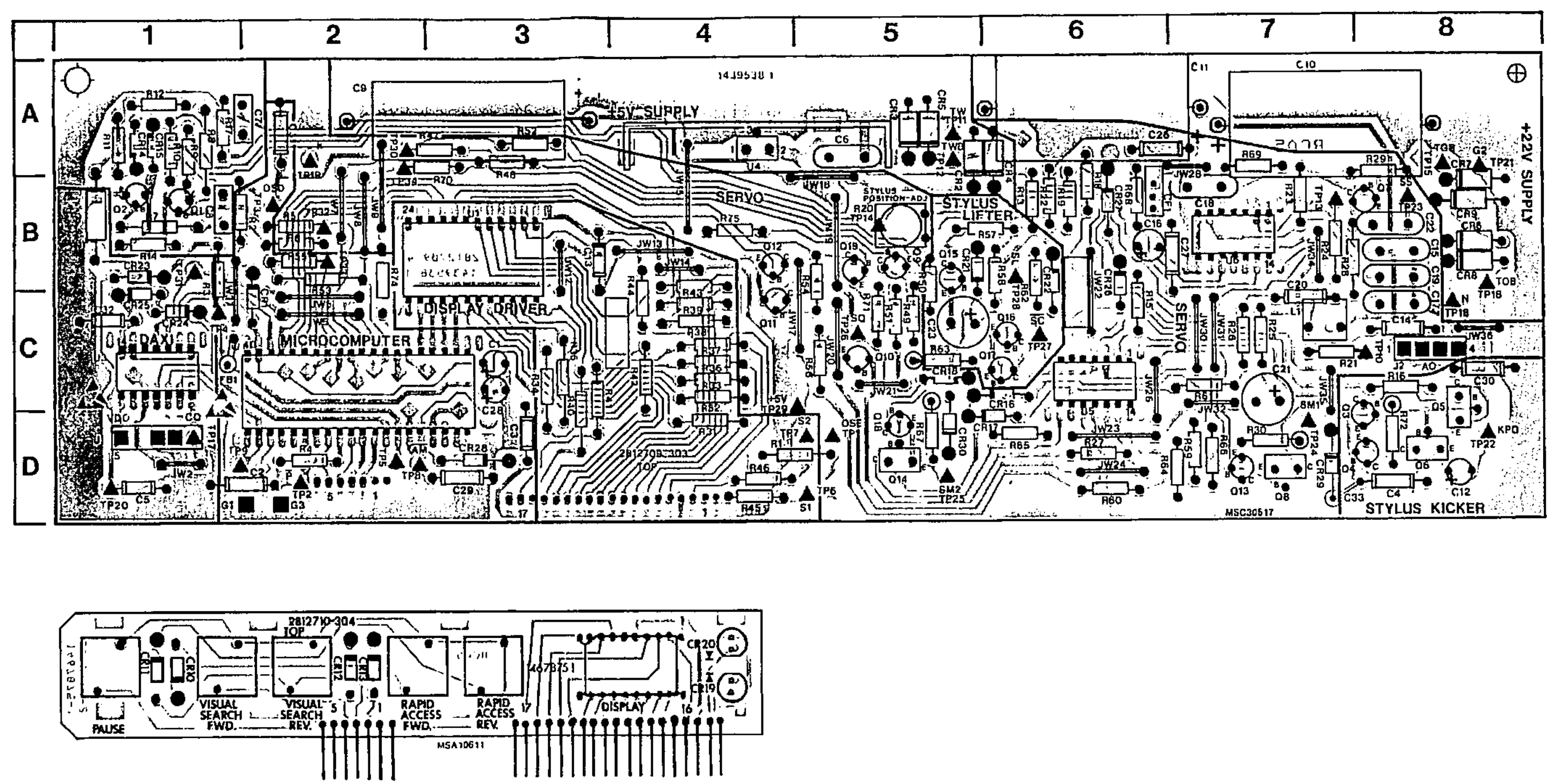


Fig. 5-4. — Signal Processing, NLAC And Noise Coring Schematic Diagram

SYSTEM CONTROL CIRCUIT BOARD

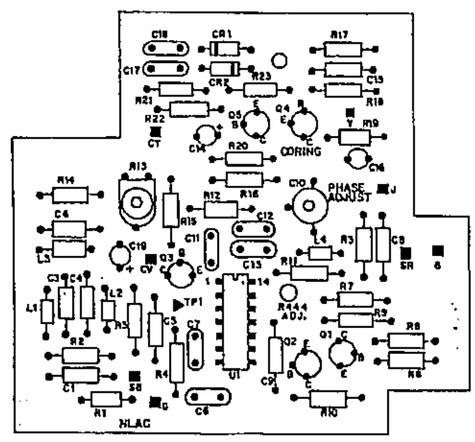
PW 500 — Component Location Guide

C1 .... 3B	J1 .... 1B	R33 ..... 4C	TP6 ..... 5D
C2 ...... 2D	J2 .... 8C	R34 ..... 3C	TP7 ..... 4D
C3 ...... 3D	L1 .... 7C	R35 ..... 3C	TP8 ..... 2D
C4 ...... 8D		R36 ..... 4C	TP9 ..... 1D
C5 ...... 1D	Q1 ...... 1B	R37 ..... 4C	TP10 .... 7C
C6 .... 5A	Q2 ...... 1B	R38 ..... 4C	TP11 .... 5A
C7 .... 2A	Q3 ...... 7D	R39 ..... 4C	TP12 .... 5A
C8 .... 1B	Q4 ...... 7D	R40 ...... 3D	TP13 .... 7B
C9 .... 2A	Q5 ...... 8D	R41 ..... 3C	TP14 .... 5B
C10 ..... 7A	Q6 ...... 8D	R42 ..... 4C	TP15 .... 8B
C11 ..... 6A	Q7 ...... 7B	R43 ..... 4C	TP16 .... 8B
C12 ..... 8D	Q8 ...... 7D	R44 ..... 4C	TP17 .... 1D
C13 ..... 3B	Q9 ...... 5B	R45 ...... 4D	TP18 .... 8C
C14 ..... 8C	Q10 ..... 5C	R46 ...... 4D	TP19 .... 2A
C15 ..... 8B	Q11 ..... 4C	R47 ...... 2A	TP20 .... 1D
C16 ..... 6B	Q12 ..... 4B	R48 ...... 3A	TP21 .... 8B
C17 ..... 8C	Q13 ..... 7D	R49 ..... 5C	TP22 .... 8D
C18 ..... 7B	Q14 ..... 5D	R50 ...... 5B	TP23 .... 8B
C19 ..... 8B	Q15 ..... 5B	R51 ..... 5C	TP24 .... 7D
C20 ..... 7C	Q16 ..... 6C	R52 ...... 3A	TP25 .... 5D
C21 ..... 7C	Q17 ..... 6C	R53 ...... 4B	TP26 .... 5C
C22 ..... 8B	Q18 ..... 5D	R54 ...... 5B	TP27 .... 6C
C23 ..... 5C	Q19 ..... 5B	R55 ...... 2B	TP28 .... 6B
C24 ..... 7D		R56 ..... 5C	TP29 .... 4D
C25 ..... 5D	R1 .... 4D	R57 ...... 5B	TP30 .... 2A
C26 ..... 6A	R2 .... 2B	R58 ...... 6B	TP31 .... 1B
C27 ..... 6B	R3 .... 1B	R59 ...... 7D	TP32 .... 2B
C28 ..... 3B	R4 .... 2D	R60 ...... 6D	TP33 .... 2B
C29 ..... 3D	R5 .... 2B	R61 ..... 7C	TP34 .... 2A
C30 ..... 8C	R6 .... 2B	R62 ..... 6C	
C31 ..... 2A	R7 .... 1B	R63 ..... 5C	**STAKES**
C32 ..... 1C	R8 .... 1A	R64 ...... 6D	AM 2D
	R9 .... 1A	R65 ...... 6D	AO 8C
CF1 ..... 6B	R10 ...... 1A	R66 ...... 7D	CO 1D
	R11 ...... 1A	R67 ...... 5D	G1 ...... 1D
CR1 ..... 2C	R12 ...... 1A	R68 ...... 6B	G2 ...... 8B
CR2 ..... 5B	R13 ...... 6B	R69 ...... 7B	G3 ...... 2D
CR3 ..... 5A	R14 ...... 1B	R70 ...... 3A	K 2A
CR4 ..... 6B	R15 ..... 1C	R71 ..... 5C	KPO 8D
CR5 ..... 5A	R16 ..... 8C	R72 ..... 8C	N 8C
CR6 ..... 8B	R17 ...... 1A	R73 ...... 1B	OSD 2C
CR7 ..... 8B	R18 ...... 6B	R74 ...... 2B	OSE 5D
CR8 ..... 8B	R19 ...... 6B		$\overline{P}$ 2D
CR9 ..... 8B	R20 ...... 5B	U1 .... 3B	S1 .... 4D
CR14 .... 1A	R21 ..... 7C	U2 .... 2D	S2 .... 4D
CR15 .... 1A	R22 ...... 6B	U3 ...... 1C	$\overline{SC}$ 6C
CR16 .... 6C	R23 ...... 7B	U4 .... 4A	SL 6B
CR17 .... 5D	R24 ...... 7B	U5 ...... 6C	SM1 ..... 7D
CR18 .... 5C	R25 ..... 7C	U6 .... 7B	SM2 ..... 5D
CR21 .... 5B	R26 ..... 7C	**Test Points**	$\overline{SQ}$ 5C
CR22 .... 6B	R27 ...... 6D		SS 8B
CR23 .... 1B	R28 ...... 7B	TP1 ..... 5C	TGB 8B
CR24 .... 1C	R29 ...... 8B	TP2 ..... 2D	TOB 8B
CR25 .... 1C	R30 ...... 7D	TP3 ...... 2B	TW 5A
	R31 ...... 4D	TP4 ..... 1C	TWB 5B
FB1 ..... 1C	R32 ..... 4C	TP5 ..... 2D	VDO 1D



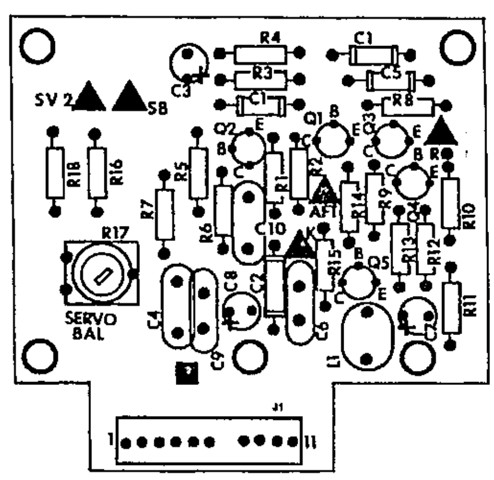
NOTE: Add 500 Series Prefix To Item Numbers

Fig. 5-5. — PW 500 System Control Circuit Board Assembly



NOTE: Add 700 Series Prefix To Item Numbers

Fig. 5-6. — PW 700 NLAC And Noise Coring Circuit Board Assembly



NOTE: Add 900 Series Prefix To Item Numbers

Fig. 5-7. — PW 900 Preamp Circuit Board Assembly

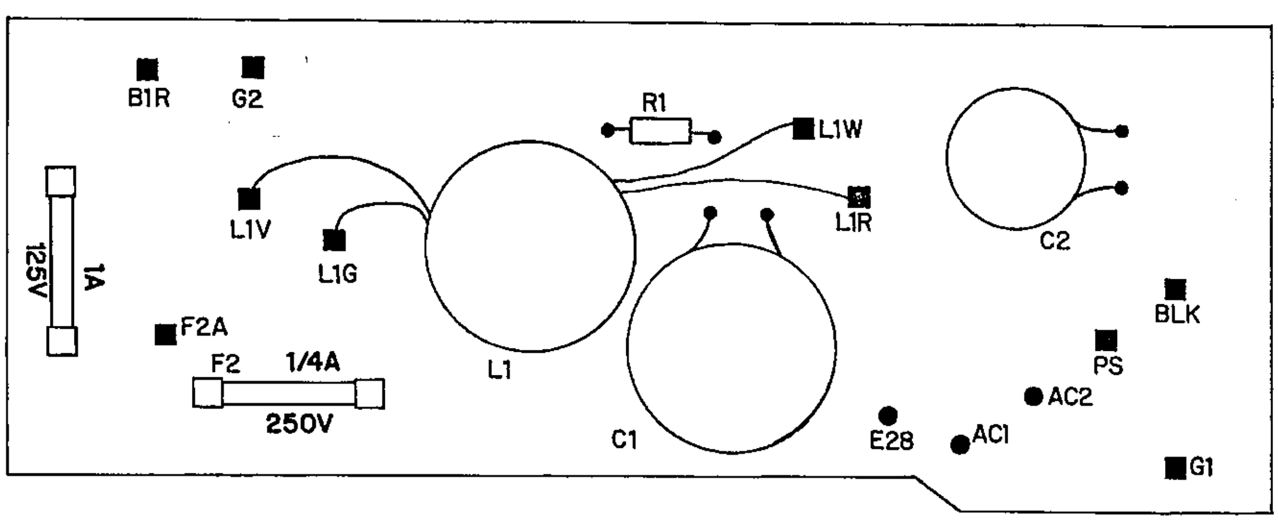


Fig. 5-8. — PW AC IN Circuit Board Assembly

REPLACEMENT PARTS

BEFORE REPLACING PARTS, READ THE FOLLOWING:

RCA-Approved Substitute Stock Numbers — To minimize service time and to avoid ordering parts you already have in stock, before ordering stock numbers in this parts list look for an RCA-approved substitute stock number in the current *RCA Distributor & Special Products Price Schedule.*

Warranty Status of Assemblies and Parts — The warranty status of some assemblies and parts are indicated by one of the following Warranty Status Codes:

- • Complete assembly not eligible for warranty exchange or replacement.
- † Eligible for warranty exchange for new or rebuilt unit.
- ‡ Complete assembly eligible for warranty replacement with new or rebuilt unit.

All parts listed without a Warranty Status Code symbol are eligible for warranty replacement as discrete components.

Warranty replacement of cabinet parts requires prior approval of RCA.

Warranty Status of assemblies and parts is subject to change without notice.

PRODUCT SAFETY NOTE — Components marked with a (*) have special characteristics important to safety. Before replacing any of these components, read carefully the **PRODUCT SAFETY NOTICE** on page 2 of this Service Data. Do not degrade the safety of the set through improper servicing. Although assemblies as a whole may not be marked with a (*), replacement of RCA assemblies with other assemblies not RCA approved may result in a safety hazard.

VIDEODISC PLAYER

MODEL SFT100W

CIRCUIT BOARDS

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
			PW 200 RESONATOR NOT FIELD REPAIRABLE IF DEFECTIVE REPLACE ARM ASSEMBLY 149002
			PW500 — SYSTEM CONTROL
PW500	149122	2812523-501	• Circuit — system control complete includes bracket and display circuit board
			CAPACITORS
C501	149200	2841273-161	1 uf 50V electrolytic
C502	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C503	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C504	143878	2840393-62m	560 pf 10% 50V Z5P tubular
C506	112969	1490939-703	.1 uf 20% 50V Y5T disc
C507	139444	2871335-75	.1 uf 10% 100V film
C508	134144	2871335-69	.033 uf 10% 100V film
C509	149152	1490303-341	2200 uf 25V electrolytic
C510	149172	1490303-251	1500 uf 35V electrolytic
C511	149172	1490303-251	1500 uf 35V electrolytic
C512	151578	2841274-453	33 uf 35V electrolytic
C513	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C514	148104	2840392-93j	180 pf 5% 50V SL tubular
C515	112969	1490939-703	.1 uf 20% 50V Y5T disc
C516	149204	2841274-442	33 uf 25V electrolytic
C517	112969	1490939-703	.1 uf 20% 50V Y5T disc
C518	112969	1490939-703	.1 uf 20% 50V Y5T disc
C519	112969	1490939-703	.1 uf 20% 50V Y5T disc
C520	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C521	149202	2841274-651	68 uf 35V electrolytic
C522	112969	1490939-703	.1 uf 20% 50V Y5T disc
C523	149203	2841275-143	100 uf 25V electrolytic
C526	145316	2840392-33a	56 pf 5% 50V NPO tubular
C527	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C528	149200	2841273-161	1 uf 50V electrolytic
C529	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C530	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C531	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C532	143882	2840395-30n	.01 uf 30% 50V Z5R tubular
C533	145316	2840392-33a	56 pf 5% 50V NPO tubular
C534	153176	2871335-16	.33 uf 20% 100V film
CF501	149194	2871038-1	Filter — ceramic
			DIODES
CR501	119597	1471872-6	Discharge path
CR502	147015	99203-206	5V DC bridge rectifier
CR503	147015	99203-206	5V DC bridge rectifier
CR504	147015	99203-206	5V DC bridge rectifier
CR505	147015	99203-206	5V DC bridge rectifier
CR506	147015	99203-206	22V DC bridge rectifier
CR507	147015	99203-206	22V DC bridge rectifier
CR508	147015	99203-206	22V DC bridge rectifier
CR509	147015	99203-206	22V DC bridge rectifier
CR510	119597	1471872-10	Logic switch
CR511	119597	1471872-10	Logic switch
CR512	119597	1471872-10	Logic switch
CR513	119597	1471872-10	Logic switch
CR514	119597	1471872-6	Forward kicker switch
CR515	119597	1471872-6	Reverse kicker switch
CR516	119597	1471872-6	Squelch isolator
CR517	119597	1471872-6	Squelch isolator
CR518	119597	1471872-6	Squelch isolator
CR519	149014	1466679-7	LED side 1 indicator
CR520	149014	1466679-7	LED side 2 indicator
CR521	119597	1471872-6	Squelch isolator
CR522	119597	1471872-6	Transient protector
CR523	119597	1471872-6	Clamp
CR524	119597	1471872-6	Current limiting
CR525	119597	1471872-6	Current limiting
CR526	119597	1471872-6	Clamp
CR527	119597	1471872-6	Clamp
CR528	119597	1471872-6	Clamp
CR529	119597	1471872-6	Clamp
CR530	119597	1471872-6	Clamp
L501	149169	973966-81	Coil — 2 mh
			TRANSISTORS
Q501	143794	1417306-12	Kicker ramp switch
Q502	143794	1417306-12	Kicker direction switch
Q503	143794	1417306-12	Kicker top driver
Q504	145776	1417303-3	Kicker bottom driver
Q505	140129	1417327-3	Kicker top output
Q506	140130	1417328-2	Kicker bottom output
Q507	143794	1417306-12	260 kHz buffer
Q508	140129	1417327-3	Servo forward output
Q509	143794	1417306-12	Clamp driver
Q510	145776	1417303-3	Clamp
Q511	143794	1417306-12	Servo forward enable
Q512	143794	1417306-12	Servo reverse enable
Q513	149041	1417351-2	Servo reverse switch
Q514	140129	1417327-3	Servo reverse output
Q515	143794	1417306-12	Squelch amplifier
Q516	143794	1417306-12	Stylus lift driver
Q518	149041	1417351-2	Servo forward switch
Q517	145395	1417318-7	Stylus lift output
Q519	143794	1417306-12	Motor stop overide
			RESISTORS
R518	829115	993113-205	*
R520	146263	1479265-14	Control servo detector
R530	829010	993113-177	*
R562	829068	993113-197	*
R563	829018	993113-183	*
R567	829010	993113-177	*
R572	829010	993113-177	*
			INTEGRATED CIRCUITS
U501	143766	1421719-1	Decoder LED driver
U502	149249	1421729-7	Microprocessor (microcomputer)
U503	149016	1421751-1	Daxi buffer
U504	149017	1421753-1	5V DC regulator
U505	149018	1421754-1	Quad amp servo/stylus kicker
U506	149019	1465648-1	Stylus position detector
	149020	2840935-1	LED — display
	149149	2871086-2	Switch — push button
			PW700 — NLAC AND NOISE CORING
PW700	149232	2812538-506	• Circuit — adaptive NLAC & noise coring
			CAPACITORS
C701	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C702	149153	2840391-73a	22 pf 5% 50V NPO tubular
C703	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C704	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C705	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C706	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C707	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C708	143871	2840392-63j	100 pf 5% 50V SL tubular
C709	143869	2840392-53j	82 pf 5% 50V SL tubular
C710	149160	2871417-2	100 pf 250V trimmer
C711	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C712	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C713	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C714	141868	2841273-162	1 uf 50V electrolytic
C715	148523	2840392-83j	150 pf 5% 50V SL tubular
C716	141868	2841273-163	1 uf 50V electrolytic
C717	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C718	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C719	146256	2841274-143	10 uf 20% 25V electrolytic
CR701	119597	1471872-10	Diode — reference level
CR702	119597	1471872-10	Diode — reference level

REPLACEMENT PARTS

(continued)

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SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
U701	149019	1465648-1	IC — synchronous detector
			TRANSISTORS
Q701	143794	1417306-12	716 kHz amp
Q702	149040	1417387-1	Inverter
Q703	143794	1417306-12	NLAC control amp
Q704	151326	1417360-1	Coring amp
Q705	143794	1417306-12	Coring driver
L701	149165	973966-76	Coil — 51 uh
L702	149169	973966-81	Coil — 2 mh
L703	149165	973966-76	Coil — 51 uh
L704	149171	973966-83	Coil — 560 uh
R711	829110	993113-201	★ Resistor
R713	146263	1479265-14	Resistor — control voltage adjust
R716	829110	993113-201	★ Resistor
			PW900 PREAMP
PW900	149132	2812530-501	• Circuit — preamplifier
			CAPACITORS
C901	149155	2840394-41n	2200 pf 20% 50V Z5R tubular
C902	147036	2840395-31n	.01 uf 20% 50V Z5R tubullar
C903	141868	2841273-162	1 uf 50V electrolytic
C904	145896	1490939-503	.047 uf 20% 50V Z5V disc
C905	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C906	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C907	146365	2841273-552	4.7 uf 35V electrolytic
C908	146365	2841273-552	4.7 uf 35V electrolytic
C909	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C910	145896	1490939-503	.047 uf 20% 50V Z5V disc
C911	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
J901	149209	2871090-1	Connector — wafer
L901	149166	973966-77	Coil — 56 uh
			TRANSISTORS
Q901	151326	1417360-1	Preamp
Q902	151326	1417360-1	Preamp driver
Q903	143794	1417306-12	AFT differential comparator
Q904	143794	1417306-12	AFT differential comparator
Q905	149007	1417389-1	Search oscillator
			RESISTORS
R909	153029	993218-721	10k ohm 2% 1/4W film
R910	153028	993218-673	100 ohm 2% 1/4W film
R912	153027	993218-705	2200 ohm 2% 1/4W film
R913	153021	993218-722	11k ohm 2% 1/4W film
R915	153030	993113-203	★
R917	146263	1479265-14	Control servo balance
			PW3000 — SIGNAL PROCESSING
PW3000	149133	2812538-501	• Circuit — signal processing
			CAPACITORS
C3101	149245	1472442-106	2700 uf 5% 200V tubular
C3102	146186	2840393-72m	680 pf 10% 50V tubular
C3103	146184	2840393-12m	220 pf 10% 50V Z5P tubular
C3104	106736	993286-63	.01 uf 10% 100V film
C3105	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3106	143874	2841252-82j	150 pf 10% 50V SL disc
C3107	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3108	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3109	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3110	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C3111	146365	2841273-552	4.7 uf 35V NP electrolytic
C3201	143871	2840392-63j	100 pf 5% 50V SL tubular
C3202	146833	2840391-93a	33 pf 5% 50V NPO tubular
C3203	148523	2840392-83j	150 pf 5% 50V SL tubular
C3204	149204	2841274-442	33 uf 25V electrolytic
C3205	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C3206	143867	2840392-23a	47 pf 5% 50V NPO tubular
C3207	149148	2840391-53a	15 pf 5% 50V NPO tubular
C3208	146184	2840393-12m	220 pf 10% 50V Z5P tubular
C3209	146249	2840391-63a	18 pf 5% 50V NPO tubular
C3210	134939	2841255-50r	.047 uf 20% 50V Z5V disc
C3211	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3212	146249	2840391-63a	18 pf 5% 50V NPO tubular
C3213	146249	2840391-63a	18 pf 5% 50V NPO tubular
C3214	146833	2840391-93h	33 pf 5% 50V N750 tubular
C3215	149196	2871417-1	4 pf 500V N750 trimmer
C3216	143869	2840392-53j	82 pf 5% 50V SL tubular
C3217	112969	1490941-703	.1 uf 20% 50V Y5T disc
C3218	149151	2840392-13a	39 pf 5% 50V NPO tubular
C3219	149204	2841274-442	33 uf 25V electrolytic

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C3221	141868	2841273-162	1 uf 50V electrolytic
C3222	143871	2840392-63j	100 pf 5% 50V SL tubular
C3223	145676	2840391-43a	12 pf 5% 50V NPO tubular
C3224	149148	2840391-53a	15 pf 5% 50V NPO tubular
C3226	119406	2840390-82a	4.7 pf 10% 50V NPO tubular
C3227	143867	2840392-23j	47 pf 5% 50V SL tubular
C3228	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3229	146366	2840390-92a	5.6 pf 10% 50V NPO tubular
C3301	139302	993286-83	.47 uf 10% 100V film
C3302	149154	2840394-61n	4700 pf 20% 50V Z5R tubular
C3303	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3304	149161	2841274-243	15 uf 25V electrolytic
C3305	126822	1472442-23	.068 uf 20% 100V film
C3306	141868	2841273-163	1 uf 50V electrolytic
C3307	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3308	139444	2871335-75	.1 uf 10% 100V film
C3309	146418	2841252-93a	180 pf 5% 50V NPO disc
C3310	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3311	143874	2841252-83a	150 pf 5% 50V NPO disc
C3312	135452	2841253-13h	220 pf 5% 50V N750 disc
C3313	146210	2840361-553	4.7 uf 20% 35V electrolytic
C3314	112969	1490939-703	.1 uf 20% 50V Z5T disc
C3315	143874	2841252-83h	150 pf 5% 50V N750 disc
C3316	147036	2840395-31n	.01 uf 20% 50V Z5R tubular
C3317	146210	2841273-553	4.7 uf 20% 35V electrolytic
C3318	147635	2841262-5	130 pf 5% 50V NPO disc
C3319	135452	2841253-13h	220 pf 5% 50V N750 disc
C3320	139040	1472442-105	2200 pf 5% 200V film
C3321	146210	2841273-553	4.7 uf 20% 35V electrolytic
C3322	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3323	146418	2841252-93a	180 pf 5% 50V NPO disc
C3324	149147	2841262-6	300 pf 5% 50V N750 disc
C3325	146418	2841252-93a	180 pf 5% 50V NPO disc
C3326	143874	2841252-83a	150 pf 5% 50V NPO disc
C3327	146256	2841274-143	10 uf 20% 25V electrolytic
C3328	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3329	146256	2841274-143	10 uf 20% 25V electrolytic
C3330	112969	1490939-703	.1 uf 20% 50V Z5T disc
C3331	112969	1490939-703	.1 uf 20% 50V Z5T disc
C3332	143871	2840392-63j	100 pf 5% 50V SL tubular
C3333	143879	2841253-91m	1000 pf 20% 50V Z5P disc
C3335	146418	2841252-93a	180 pf 5% 50V NPO disc
C3336	112969	1490939-703	.1 uf 20% 50V Z5T disc
C3401	149233	2841253-13a	220 pf 5% 50V NPO disc
C3402	149155	2840394-41n	2200 pf 20% 50V Z5R tubular
C3403	135048	1472442-17	.022 uf 20% 200V film
C3404	146249	2841251-63a	18 pf 5% 50V NPO disc
C3405	149157	2841262-2	9.1 pf ±.5 pf 50V NPO disc
C3406	132174	1474578-7	11 pf 500V trim
C3407	147036	2840395-31n	.01 uf 20% 50V Z5R tubular
C3408	146254	2841262-4	91 pf 5% 50V NPO disc
C3409	149145	2841251-27a	8.2 pf ±.5 pf 50V NPO disc
C3410	146211	2841274-141	10 uf 25V electrolytic
C3411	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3412	145316	2841252-33a	56 pf 5% 50V NPO disc
C3413	149146	2841262-8	200 pf 5% 250V NPO disc
C3414	143885	2841262-10	110 pf 5% 50V NPO disc
C3415	145316	2841252-33a	56 pf 5% 50V NPO disc
C3416	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3417	148502	1472442-51	1000 pf 10% 200V film
C3418	145896	1491415-50r	.047 uf 20% 50V Z5V disc
C3419	147036	2840395-31n	.01 uf 20% 50V Z5R tubular
C3420	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3421	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3422	143866	2840391-83a	27 pf 5% 50V NPO tubular
C3423	135452	2841253-13h	220 pf 5% 50V N750 disc
C3424	149190	993286-161	.33 uf 5% 100V film
C3425	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3426	149188	993286-129	.015 uf 5% 100V film
C3427	149189	993286-153	.15 uf 5% 100V film
C3428	149191	993286-151	.12 uf 5% 100V film
C3430	142751	2841255-12m	.0068 uf 10% 50V Z5P disc
C3429	149153	2840391-73a	22 pf 5% 50V NPO tubular
C3431	147036	2840395-31n	.01 uf 20% 50V Z5R tubular
C3501	143879	2841253-91m	1000 pf 20% 50V Z5P disc
C3502	143879	2841253-91m	1000 pf 20% 50V Z5P disc
C3503	146254	2841262-4	91 pf 5% 50V NPO disc
C3504	149150	2841262-9	75 pf 10% 50V NPO disc
C3505	147971	2841255-31m	.01 uf 20% 50V Z5P disc
C3506	135452	2841253-13e	220 pf 5% 50V N220 disc
C3507	149147	2841262-6	300 pf 5% 50V N750 disc
C3508	135452	2841253-13e	220 pf 5% 50V N220 disc
C3509	149147	2841262-6	300 pf 5% 50V N750 disc
C3510	143871	2841252-63a	100 pf 5% 50V NPO disc
C3511	143874	2841252-83a	150 pf 5% 50V NPO disc
C3512	146249	2840391-63a	18 pf .1 pf 50V NPO tubular
C3612	149164	2871335-125	.01 uf 5% 100V film

REPLACEMENT PARTS

(continued)

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SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C3513	143874	2841252-83a	150 pf 5% 50V NPO disc
C3514	146831	2841255-40r	.022 uf 20% 50V Z5V disc
C3515	143879	2841253-91m	1000 pf 20% 50V Z5P disc
C3516	143882	2841255-30m	.01 uf 20% 50V Z5P disc
C3517	143871	2841252-63a	100 pf 5% 50V NPO disc
C3518	143882	2841255-30m	.01 uf 20% 50V Z5P disc
C3519	143871	2841252-63d	100 pf 5% 50V N150 disc
C3520	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3521	143866	2841251-83a	27 pf 5% 50V NPO disc
C3522	143882	2841255-30m	.01 uf 20% 50V Z5P disc
C3524	143879	2841253-91m	1000 pf 20% 50V Z5P disc
C3525	143866	2841251-83a	27 pf 5% 50V NPO disc
C3526	143879	2841253-91m	1000 pf 20% 50V Z5P disc
C3527	143881	2841254-41m	2200 pf 20% 50V Z5P disc
C3528	148057	2840393-92m	1000 pf 20% 50V Z5P tubular
C3529	147971	2841255-31m	.01 uf 20% 50V Z5P disc
C3601	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3602	149153	2840391-73a	22 pf 5% 50V NPO disc
C3603	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3604	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3605	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3606	149158	2841262-1	510 pf 5% 50V N750 disc
C3607	150641	2871417-3	Trimmer
C3608	146212	2841274-152	10 uf 35V electrolytic
C3609	148057	2840393-92m	1000 pf 10% 50V Z5P tubular
C3610	112969	1490939-703	.1 uf 20% 50V Y5T disc
C3611	149159	2871335-141	.047 uf 5% 100V film
C3612	149163	2871335-133	.022 uf 5% 100V film
C3613	149159	2871335-141	.047 uf 5% 100V film
C3614	149162	2841273-362	2.2 uf 50V electrolytic
C3615	146184	2840393-12m	220 pf 10% 50V Z5P tubular
C3617	149164	2871335-125	.01 uf 5% 100V film
C3618	143871	2840392-63j	100 pf 5% 50V SL tubular
C3619	139444	993286-75	.1 uf 10% 100V film
C3801	145033	993286-16	.33 uf 20% 100V film
			DIODES
CR3101	119597	1471872-10	NLAC detector
CR3102	119597	1471782-10	NLAC detector
CR3501	149033	1477074-2	Varactor
CR3601	119597	1471872-6	Audio mute switch
CR3602	119597	1471872-6	Audio mute switch
			BEADS
E3201	143814	1443391-112	Ferrite
E3202	143814	1443391-112	Ferrite
E3301	143814	1443391-112	Ferrite
E3302	143814	1443391-112	Ferrite
E3303	143814	1443391-112	Ferrite
E3304	143814	1443391-112	Ferrite
E3305	143814	1443391-112	Ferrite
E3305	143814	1443391-112	Ferrite
E3306	143814	1443391-112	Ferrite
E3501	143814	1443391-112	Ferrite
E3502	143814	1443391-112	Ferrite
E3503	143814	1443391-112	Ferrite
E3601	143814	1443391-112	Ferrite
J3002	149208	1466404-1	Connector — wafer
J3501	149144	1449128-2	Connector — R-F
J3502	149144	1449128-2	Connector — R-F
			COILS
L3101	149246	973966-80	130 uh
L3201	149173	973966-75	47 uh
L3202	149178	973966-74	39 uh
L3203	149170	973966-82	892 uh
L3204	149171	973966-83	560 uh
L3205	149173	973966-75	47 uh
L3206	149176	973966-71	22 uh
L3207	149173	973966-75	47 uh
L3208	149175	973966-69	12 uh
L3301	149167	973966-78	68 uh
L3302	149167	973966-78	68 uh
L3303	149184	1442642-27	22 uh
L3304	149168	973966-79	82 uh
L3305	149184	1442642-27	22 uh
L3306	149176	973966-71	22 uh
L3401	149177	973966-73	36 uh
L3402	149195	1467370-3	34-60 uh symmetry adjust
L3403	149193	1467370-2	10-19 uh center frequency
L3404	126833	1463679-5	15 uh
L3405	149175	973966-69	12 uh
L3501	143832	1467283-2	61.25 MHz osc.
L3502	143832	1467283-2	67.25 MHz osc.
L3503	149174	1467283-5	62.75 MHz trap
L3504	149174	1467283-5	56.75 MHz trap
L3505	143832	1467283-2	Band pass
L3506	143832	1467283-2	Band pass
L3507	149192	1496280-1	.15 uh
L3509	149186	1467685-12	10 uh 4.5 MHz adjust
L3510	151854	1442642-26	1.8 uh
L3601	149165	973966-76	51 uh
L3602	149169	973966-81	2 mh
L3603	149165	973966-76	51 uh
L3604	149185	1445885-1	17.5 mh
P3001	149182	1477678-104	Connector — 4 pin
			TRANSISTORS
Q3101	143794	1417306-12	NLAC buffer
Q3102	149040	1417387-1	NLAC amp
Q3103	143794	1417306-12	NLAC amp
Q3104	143794	1417306-12	NLAC output driver
Q3201	143794	1417306-12	Phase corrector
Q3202	143794	1417306-12	Video buffer
Q3301	143794	1417306-12	Delayed video driver
Q3302	143794	1417306-12	Vertical detail driver
Q3303	143794	1417306-12	Chroma/vertical detail
Q3304	143794	1417306-12	Chroma driver
Q3305	145776	1417303-3	Chroma buffer
Q3306	143794	1417306-12	Luminance buffer
Q3401	143794	1417306-12	Video buffer
Q3402	143794	1417306-12	Video amp
Q3403	143794	1417306-12	Clock phase shifter
Q3404	143794	1417306-12	Clock buffer
Q3406	149041	1417351-2	Transducer driver
Q3405	145395	1417318-7	Transducer driver
Q3407	145395	1417318-7	Transducer driver
Q3408	149041	1417351-2	Transducer driver
Q3601	148070	1417411-1	Defect sample and hold
Q3801	145395	1417318-7	12V regulator
			RESISTORS
R3118	829010	993113-177	*
R3202	147615	1479265-20	Control video level
R3304	146263	1479265-14	Control delayed video
R3312	146175	1479265-19	Control chroma level
R3317	146175	1479265-19	Control vert detail level
R3322	153024	993218-685	330 ohm 2% 1/4W film
R3323	153024	993218-685	330 ohm 2% 1/4W film
R3324	153024	993218-685	330 ohm 2% 1/4W film
R3325	830113	993290-204	*
R3328	143849	1479265-9	Control lum channel null
R3329	143849	1479265-9	Control chroma channel null
R3402	146263	1479265-14	Control modulation depth
R3404	141617	993218-707	2700 ohm 2% 1/4W film
R3407	153022	993218-704	2k ohm 2% 1/4W film
R3408	152204	993218-715	5600 ohm 2% 1/4W film
R3412	146175	1479265-19	Control VXCO gain
R3418	147960	993272-341	*
R3419	143848	1479265-13	Control phase det. gain
R3438	147040	993218-472	1.3 meg ohm 5% 1/4W film
R3442	148893	993218-483	3.9 meg ohm 5% 1/4W film
R3444	146263	1479265-14	Control armstretcher gain
R3446	829022	993113-185	*
R3449	829033	993113-189	*
R3511	153029	993218-721	10k ohm 2% 1/4W film
R3512	153023	993218-379	180 ohm 2% 1/4W film
R3515	151709	993218-713	4700 ohm 2% 1/4W film
R3522	147591	993218-485	4.7 meg ohm 5% 1/4W film
R3524	502527	82283-103	*
R3602	829010	993113-177	*
R3610	153025	993218-181	3.3 meg ohm 10% 1/4W film
R3801	152565	993218-716	6200 ohm 2% 1/4W film
R3802	151944	993218-701	1500 ohm 2% 1/4W film
R3803	830010	993290-177	*
S3501	149141	1464550-12	Switch — channel selector
S3502	151859	2872130-1	Switch — antenna/R-F
			INTEGRATED CIRCUITS
U3201	149036	1421760-1	Video FM demodulator
U3301	149039	1421752-1	Comb filter/defect correction
U3401	149018	1421754-1	Quad OP amp
U3402	149034	1421761-1	Video convertor
U3501	149037	1421758-1	R-F modulator
U3601	149035	1421760-2	Audio FM demodulator
U3801	149038	1421753-2	15V regulator
VR3301	149042	99202-315	Diode — zener 9.1V
Y3401	149139	1107863-14	Crystal — 3.58 MHz
Y3402	149138	1107863-17	Crystal — 5.11 MHz

REPLACEMENT PARTS

(continued)

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SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
	151858	2812538-502	Cover — R-F modulator
	150477	2840762-1	Link — switch
	152797	1467858-1	Shield — video modulator
	149143	2870862-6	Spring — antenna lever 31 turns
	151895	2870862-8	Spring — antenna lever 24.5 turns
	135255	59149-106	Nut — for R-F connector J3501, J3502
			PW AC IN
	149134	2812546-502	• PW AC board
C1	145679	2870613-225	* Capacitor
C2	149201	2870697-219	* Capacitor
F1	426973	1446691-7	* Fuse
F2	149004	1448691-10	* Fuse
L1	149199	1495292-3	* Choke — R-F line
	151972	2871454-1	* Cover for PW AC in board
			MECHANICAL ASSEMBLY
1	149049	2812511-501	Turntable w/follower
2	149105	2840959-1	Screw — turntable adjust
3	149058	2871082-1	Retainer — lower bearing
4	149052	2812511-510	Bearing — turntable w/felt & retainer
5	149057	2871081-1	Retainer — upper bearing
6	149025	2840900-1	Guide — belt
7	149056	2840736-2	Grommet — & spacer for turntable motor
8	149211	2812511-508	Fan — turntable motor
9	149140	2812536-501	Stylus sweeper assembly
10	149103	2840940-1	Spring — for sweeper
11	120367	93605-103	Retainer — "E" ring for sweeper assembly
12	149102	2812536-504	Cam — left receiver pad assembly
13	149131	2840786-1	Screw — latch lever w/retainer & washer
14	149101	2812540-507	Arm — door actuator/pin assembly
15	149100	2812540-508	Spring — counter balance assembly
16	149099	2840735-2	Retainer — ring for counter balance
17	149051	1467385-2	* Knob — function lever
18	149237	2812540-511	Shaft — detent assembly
19	149135	2840793-1	Cam — function switch
20	149227	2840945-1	Bracket — function lever
21	149228	990102-123	Screw — nut & washer for switches
22	149226	2871450-1	Bracket — power switch
23	149137	999340-403	Nut — retainer for turntable lift cam
24	149072	2840754-1	Follower — turntable shaft
25	149136	2812511-509	Cam — pin assembly
26	149050	2871099-1	Cap — spindle
27	149120	2871094-1	Washer — spindle cap
28	149121	2871097-1	Yoke — turntable retainers w/screws
29	149030	2870870-3	Spring — spindle shaft
30	149093	990064-103	Screw — for turntable yoke
31	149024	2871083-1	Cam — turntable lift
32	149023	2812511-506	Lever — & pin assembly turntable lift
33	149022	2871006-1	Rod — antenna switch actuator
34	150361	2841768-1	Cap — antenna switch adjust w/set screw
35	149092	8888539-601	Screw — for cap
36	149074	2840620-1	Insert — plastic for lever & pin assy
37	149075	2840619-1	Link — turntable pulldown
38	149077	2870870-5	Spring — pulldown link
39	152751	1467368-1	* Belt — turntable
40	149091	2840937-1	Cap — retaining for lift rod
41	149076	2812511-505	Ring — turntable lift assembly
42	149079	2840913-1	Pivot — turntable lift rod
43	149089	1467371-1	Cap — rail
44	149090	2870884-1	Cap — for cam & right receiver pad
45	149078	1467334-1	Guide — right rail
46	149082	1467332-1	Guide — left rail
47	151696	2871002-2	Cam — crank rear receiver
49	149086	999340-2	Nut — push-on for door cover
48	149080	2840676-1	Pin — for pin & actuator cam
50	149060	1439546-1	Cover — plastic door caddy
51	149063	1439540-1	Door — caddy entry less cover
52	149083	2840728-1	Screw — door retaining
53	149029	2870862-3	Spring — caddy door
54	149109	2840604-1	Arm — turntable lift
55	149088	2840938-1	Cap — retainer for sweep latch
56	149031	2840912-1	Spring — left receiver pad
57	149118	2812536-502	Arm — sweeper latch
58	149117	1467358-1	Arm — latch
59	149116	2870862-1	Spring — for arm latch
60	149115	2871441-1	Retainer — side caddy
61	149032	2870847-1	Retainer — side caddy
62	149114	2870846-1	Plate — retainer center caddy
63	149113	2840631-1	Shaft — carriage
64	149112	2871011-1	Pad — right receiver arm
65	149111	2840795-1	Pin — pivot for right receiver pad
66	149028	2870862-7	Spring — tension for right recvr pad
67	149027	2840638-1	Spring — spine push back
68	120367	93605-103	Retainer — for pivot pin
69	149110	1467399-1	Defeat — caddy lock
70	149028	2870862-7	Spring — caddy lock
71	149225	2840793-2	Cam — switch for S3 & S4
72	149129	2840780-1	Cap — retainer
73	149061	1467392-1	Cover — motor fan
77	149126	2840767-1	Yoke — detent
78	149130	990068-105	Screw — for detent
81	149107	2812535-503	Pad — front receiver hold down
82	149013	1467395-1	Drum — photo interupter
83	149217	8888539-621	Screw — set for drum
84	149059	2812535-509	Cam — plunger for ID switch
85	149238	2841727-1	Clip — grounding
86	149241	2840958-1	Spring
87	149242	2812535-504	Arm — rear receiver pad
88	149243	2871096-1	Spring
			ARM ASSEMBLY
	149002	2812500-501	✪ Arm — pick-up less cartridge 149000
89	149001	2812502-501	Transducer assembly complete
90	149003	2812500-504	Solenoid — stylus lifter assembly
91	149096	2812500-502	Cover — cartridge assembly w/latch
92	149071	2840691-1	Spring — latch slide
95	149097	2840785-1	Screw — transducer pressure adjust
96	149070	2840645-1	Link — transducer actuator
97	149123	2870822-1	Cover — resonator board
98	149069	2871404-1	Cover — preamp board
99	149068	2840729-1	Cover — for transducer link
100	149067	2812548-502	Cam — pickup arm return assembly
101	149119	2840996-1	Spring — for release rod
102	149012	2871079-1	Gear — servo rack
103	149244	2840646-1	Spring — transducer pressure
			SERVO GEAR ASSEMBLY
104	149043	1467393-1	Bracket — front servo gear
105	149044	1467394-1	Bracket — rear servo mounting
106	153064	812540-02	Clutch — gear assembly
107	149011	2812540-512	Gear — shaft assembly
108	149125	2840919-1	Gear — pinion
109	149045	1467368-2	Belt — servo drive
110	149124	8863899-1	Retainer — for servo pinion
111	153026	93605-106	Retainer — for shaft & gear assembly
112	149128	2812540-509	Detent — assembly for function lever
113	150360	2841769-1	Spring — antenna switch assist
			LANDING LATCH ASSEMBLY
	151973	2812535-512	Landing latch assembly complete
114	151951	2841794-1	Gear — detent landing latch
115	151952	2870862-10	Spring — landing latch
116	151953	2872143-1	Bracket — landing latch
117	151950	2841731-3	Retainer — ring
118	149124	8863899-1	Retainer — C ring
119	151403	2812540-505	Elbow — shaft assembly
120	150248	2840904-2	Pin — clutch
121	152569	2841781-1	Washer — clutch
122	150732	2841784-1	Cup — for spring 150731
123	150731	2870870-8	Spring — turntable mtr adj
	153073	77880-108	Washer — for servo clutch
			MISCELLANEOUS
			ELECTRICAL AND MECHANICAL
B1	149005	2812511-507	* Motor — turntable drive assembly
P501	149182	1477678-104	Connector — 5 pin

✪ Pick-up Arm Assembly, less cartridge, replaceable as complete item in warranty only if PW 200 resonator circuit is defective.

REPLACEMENT PARTS

(continued)

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SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
0S1	149047	2812546-501	Photo — coupler assembly
B2	149006	2870801-1	Motor — servo drive
P502	139145	1477678-103	Connector — 4 pin
R1	502518	82283-101	* Resistor
P901	149183	2871051-10	Connector — 11 pin
R2	149046	2871076-1	Resistor — control radius sense
S2	151324	1495451-15	* Switch
S3	149221	1495451-18	Switch — DC play
S4	151323	1495451-14	* Switch
S5	149106	2812535-508	Switch — side ID (bottom)
S6	149198	1495451-7	Switch — DC spine
S6/S8	149197	2812535-505	Switch — spine sensor assembly
S7	152054	1495451-20	Switch — stylus clean
S8	149219	1495451-11	* Switch — AC spine
S9	152055	1495451-21	Switch
T1	149008	2811806-1	* Transformer — power
	149231	2840997-1	Key — polarizing for P501
	149229	1467812-501	* Cord — power
	149230	2840948-1	Key — polarizing for P901
	114918	990327-128	Nut — for R2
	139506	1449797-1	Terminals for P501, P3001
	149206	2871068-2	Terminals for P901

INSTRUMENT ASSEMBLY

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
	149066	2871039-1	Button — aux door release
	149236	1467837-1	Button — switch
	149216	1439501-1	Cabinet — bottom
	149215	2812503-502	Cabinet — top (less trim and overlays)
	149064	1467378-1	Door — aux cabinet
	149062	2840726-1	Foot — pad
	149084	990303-86	Nut — spring cabinet retaining
	149087	990303-85	Nut — spring base mounting
	149212	2871047-1	Overlay — aluminum function
	149958	1439533-2	Overlay — logo
	149095	1467379-1	Spring — aux door button
	149094	1467800-1	Retainer — metal button
	149214	2870805-1	Trim — brushed aluminum
			STYLUS CARTRIDGE
	149000	2812539-501	Cartridge — video pickup
			ACCESSORIES
	144518	2871464-1	Balun — antenna matching
	149054	2871056-1	Balun — receiver matching
	149048	2871472-1	Cable — antenna extension 300 ohm
	147173		Cable — 75 ohm coax 5' lg.
		2814409-3	Instruction book
			TOOLS
	149073	2812522-503	Caddy — less disc
	149235	2812554-501	Disc — test
	149239	2871461-1	Gauge — height
	149053	2811825-2	Lubricant — oil
	149248	891997-109	Lubricant — DC 111
	149247	2811870-1	Lubricant — Rykon O
	151303	1421215-899	Tool — hex 2.5 mm

Specifications Subject to Change Without Notice

CONSULT YOUR RCA DISTRIBUTOR FOR REPLACEMENT PARTS AND ACCESSORIES